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ABSTRACT

A project tested the feasibility of describing learning outcomes in adult/continuing education in ways that could be more clearly understood by three major groups of people--students, teachers, and employers of graduates--and how these could be assessed and accredited. Academic staff explored four different approaches to describing learning outcomes based on objectives, subject knowledge. discipline, and competence. Student views were collected through structured workshops. Students described personal, social, academic, and vocational outcomes but were unable to write their own learning outcomes. Employer views were collected through consultation, interviews, and discussion. Employers judged employability of graduates through a small number of generic skills. A workshop on assessment showed little evidence of development of an assessment strategy for a course or program as well as the use of conservative approaches. Other work on accreditation raised three major issues: level, credit value, and coherence. Work on accreditation undertaken by three project subject groups resulted in three models based on general, subject specific, and core learning outcomes. A four-stage model was proposed: outcome description, assessment, curriculum model, and credit rating. (Notes include information on taxonomies, learning styles, and knowledge; approaches to assessment; and credit accumulation and transfer systems. Appendixes include project strategy and methodology, participant lists, and a 31-item bibliography.) (YLB)

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In April 1992, as a result of a Government decision, the Unit was merged with the Further Education Unit, which is continuing to work on issues of Learning Outcomes.

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A Development Project Report

Learning Outcomes in Higher Education

Sue Otter

Unit for the Development of Adult Continuing Education

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Preface

The first degree is the benchmark around which the British education system has traditionally been built. Higher Education is defined as education leading to it, or to what follows from it; the A level qualification which dominates the final years of secondary education was designed to control entry to it; the O level qualification in turn was designed to control entry to A level, and so the influence cascaded down to the earliest years of schooling. At the same time, while the first degree is not regarded as a directly vocational qualification, it exerts considerable influence on the labour market. Employers recruitment behaviour clearly reflects a notion that 'graduates' are, in some fundamental sense, different from non-graduates, and that for most purposes the fact that someone is a graduate is more important than the subject of the degree.

However, despite this pivotal role, the notion of what a degree represents has never been very clear. While one might wish to argue that all graduates share a broadly common range of qualities - analytical, critical, communicative, etc. it is not clear how far these are common across disciplines or institutions, nor is it always clear how the processes of teaching and assessment in higher education actually develop and measure them. In the absence of such evidence it is equally easy to argue that the first degree exists primarily to sort young people into a rank order for social and economic purposes, using a set of criteria which at best lack a coherent theoretical underpinning, and at worst, are largely arbitrary.

Pragmatists sometimes argue that the absence of a theoretical base is irrelevant, since there is a well established professional consensus about what a graduate is. Such an approach rightly recognises that the notion of a first degree does represent something real, albeit not precisely described. However, if one accepts the notion that first degrees in their present form represent something which individuals and the nation need, pressures to increase qualification levels, reduce costs and at the same time maintain quality put such a professional consensus under considerable strain. Unless it is possible to define more clearly and publicly what a first degree represents, one of these forces will inevitably have to give way.

Of the three, quality is the most vulnerable, since expenditure levels and participation rates can both be simply described. On the other hand, a notion of quality which is understood only within a closed professional circle is unlikely to exert much force against clear and simple numerical data. The long term social and economic effect will be the same as a reduction in participation, but it will be more damaging and insidious, beacuse it will take much longer to be visible.

We need, therefore, to find better definitions of what a first degree represents. We also need to do this rapidly, since structural changes are already eroding the benchmarks on which the pragmatic definitions rest. In practice, the key benchmark is the 'traditional' young graduate. The qualities which such people have in common are not that they have demonstrated a common set of skills or knowledge, since this evidently varies very widely between subjects, institutions and over time. Nor can it easily be argued that they share a common set of underpinning intellectual capabilities, since there is little evidence that such things are consciously developed or assessed when decisions are made on whether or not to award degrees.

What is, or used to be, common to all graduates lies not in what they can do, but in the fact that they have participated in a common set of processes. They are all of broadly the same age, and have survived a lengthy selection process, involving formal and informal selection at 14, 16 and 18. They have spent three years in 'full time' study with a large number of people from similar social and economic background, away from home during a critical period of their social and emotional development. During that time they have been freed from major economic insecurity, provided with teaching at a relatively low staff student ratio, and with relatively free access to extensive libraries and other learning resources. The notion that a first degree represents something distinctive, which differentiates graduates from others would appear (at least) to stem as much from these common experiences as from a demonstration of particular personal or intellectual qualities, although the former may be surmised to derive from the latter.

Almost all the elements of this process are now being eroded. Increasingly, undergraduates are older with more stable domestic circumstances and responsibilities, and entering through non-traditional routes of various kinds. They are more often studying part-time, living at home, under serious financial stress, experiencing high staff student ratios and limited access to learning resources. If the defining characteristics of a graduate arose implicitly from participation in the former process, and are not explicitly described, how can we be sure that those who participate in an entirely different process are in any sense 'graduates' at all? The quality challenge is clear: unless we can define what we mean by a graduate we can neither prove or disprove arguments about changes in quality in response to change in resourcing or circumstances. If the notion of higher education is worth defending, it is worth defining.

Stephen McNair
Head of Unit

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Executive Summary

1 Project Objectives

The project described in this report was based on two simple premises:

- that learning is the central purpose of higher education
- that the measurement of learning might best be achieved through the description of outcomes (what a learner knows, or can do as a result of learning) rather than the more traditional description of learning input (syllabus or course content).

The purpose of the project was to examine the feasibility of describing a degree in terms of its outcomes - what a graduate can do, know and understand.

It began from the premise that a degree is currently described in terms of the process - three years full time study - rather than achievement, and that, as a result, notions of quality are based on the process, rather than its outcome. This approach may be increasingly difficult to sustain as many of the elements of the traditional process are removed or reshaped in the move from an elite to a mass higher education system. Unless the outcomes of the traditional model are adequately described, it will be impossible to properly assess the impact on quality of the many structural changes taking place.

The project proposed that a stronger focus on outcomes would enable quality assurance processes to be more transparent and rigorous. It was believed that this would help improve the quality of the dialogue between higher education, its learners, funders and those who employ its graduates.

It was also believed that the description of outcomes alone would not solve the problem, and that it was essential that those outcomes could be assessed, and recognised in systems of accreditation. Credit would thus be more directly linked to explicit achievement. A further benefit of the approach would be in the increased ability to recognise and accredit prior learning, and learning undertaken outside formal classroom settings.

The project's aim was exploratory and developmental. It sought to find ways of recognising the full range and diversity of achievement which existing degree programmes represent, not to narrow or constrain them. It therefore set out to investigate a range of approaches with practising academics, rather than to impose a pattern or methodology.

2 Key Conclusions

The project work points to the following key conclusions:

- it is possible to describe the outcomes of higher education more explicitly, although they cannot be expressed in simple 'can do' statements, and, in a complex and changing environment, such definitions will never be complete or fixed;
- descriptions of learning outcomes in higher education cannot be expressed as a single set of 'national standards' of the kind developed for national vocational qualifications, since higher education exists to meet the needs of a variety of client groups and a range of social, economic, scientific and actual needs, and properly embodies a range of different cultures and value systems;
- it is necessary to develop processes within each institution to link outcome definitions with quality assurance, since the authority to define the purposes of degree programmes rests with the chartered institution, rather than with any national agency;
- the principal benefit in an outcomes led approach lies, therefore, in providing a focus for staff, students and employers to examine more clearly what they are seeking to achieve, and enabling them to contribute actively to the development of a common understanding of the nature and purposes of higher education and of specific programmes and awards;
- the process of defining and accrediting outcomes can best be seen in terms of a four stage cycle:

  preliminary definition by academic staff,

  design of an assessment strategy,

  production of a 'curriculum model' which weights the various types of outcome - core, subject specific, general and other,

  allocation of credit value to groups of outcomes;
- a range of materials and approaches exist to help in the definition of outcomes. These include models based on objectives, subject knowledge, the discipline and competence. No single one has been demonstrated to be ideal and there may be advantages in using more than one;
- if quality is to be assured it is important that the assessment and curriculum modelling stages of the cycle are carried out before the allocation of credit value;
- the definition of outcomes should not be separated from an investigation of assessment since outcome definitions which are not assessable are not of any practical value;
- an outcome led approach requires staff to develop and use methods of assessment which measure achievements directly, but current assessment practice tends to neglect these questions of validity in favour of reliability, and many academic staff lack experience of appropriate approaches to assessment;

- employers are, in general, more concerned with the 'core' learning outcomes of higher education than with general or subject specific ones;
- students can play a particularly valuable role in the development of approaches to assessment, and this dialogue can itself help to increase their motivation and advisement;
- the definition of learning outcomes is considerably helped by the use of cross-institutional subject groups, which provide a broader contrast of perspectives than is possible in a single institution. Opportunities for this kind of staff development appear to be rare.

3 What was achieved?

The project has helped to 'flesh out' ways of describing learning outcomes in higher education; to clarify who can and should be involved in their development, and in what ways. It achieved two things:

- it tested and refined a collaborative model for the development of learning outcome statements, working by an iterative and collaborative process from within the academic culture, rather than by imposing managerial models from outside. It used a simple experiential approach to help subject specialists to capture the essence of what it means to be "a graduate" in a given subject, in the belief that the solution lay in helping practising academic staff to make their tacit knowledge and understanding explicit and public.
- it produced a quality development model which links the definition and assessment of outcomes with an approach to coherence and a credit framework. This has important implications for the quality assurance of all learning in HE but especially for learning which is not part of a course (like some work based learning) and for the accreditation of prior learning.

4 Methodology

The project was undertaken by the Unit for the Development of Adult Continuing Education, in collaboration with nine institutions of higher education in England and Wales, and funded by the Department of Employment.

The Project Director and Project Officer worked with academic staff from the participating institutions in cross institutional subject groups, to define the outcomes of exsisting degree programmes, and examine approaches to assessing and accrediting those outcomes. Five subject areas were considered: Design, English, Engineering, Environmental Science and Social Science.

Ninety three institutions were represented at a consultative conference and the results of the preliminary work by the subject groups were published as *What Can Graduates Do?* This was circulated to all higher education institutions for comment, and 74 responded. An edited version of the publication was circulated for comment to a range of employers, and 138 did so. A series of workshops were held with undergraduates to explore student views, involving some 700 students in all participating institutions.

5 Development Issues

The project has identified some key issues requiring further attention. These are

Assessment

The project has demonstrated the fundamental connection between the description and assessment of learning outcomes, and the importance of this in maintaining quality. The evidence is that many academic staff are not well equipped to assess some of the outcomes generally regarded as central to higher education. Development work is required on techniques for assessing some of the more complex and difficult of the outcomes of higher education, and staff development on assessment for academic staff generally is also a high priority.

Level

As the boundaries between higher education and other forms of education and training become more permeable, it becomes more critical to understand how level is being defined, and seek a consensus on this. Further work is needed on the notion of level within CAT systems. The project suggests that there are at least two quite distinct notions of level in use in higher education (based on 'milestones/prerequisites' and on 'growth/autonomy') and that much of the assessment of achievement is designed to reflect this, but without any explicit agreement about intentions, definitions or techniques.

Core

Further work is required to seek clarification of what are the core qualities which characterise a "graduate". There is a wide consensus that there is such a set but, although a variety of models exist, there is no agreement about what these qualities are, nor how they are to be recognised. Both employers and academic staff felt that it was currently possible for people to graduate without some of the key capabilities which they expect of a graduate.

Credit

The relationships between the various credit accumulation and transfer systems are complex. Work is needed on the notion of credit, and how it can be defined to ease transition between higher, further, adult and work based learning. This is particularly important in relation to the connections between National Vocational Qualifications and degrees.

Collaboration

The relationships between education and training institutions are becoming more complex, and learners increasingly seek to move across sectoral and institutional boundaries. The definition of learning outcomes may help in articulating these relationships (and cross sectoral groups may be a valuable way of defining outcomes). Work is needed to establish the part which outcome definition can play in encouraging collaboration between institutions and agencies, and the part which existing collaborative structures, consortia, Open College Networks etc. can play in defining outcomes.

Section 1

Aims and Strategy

Chapter 1

Introduction

1.1 Why Learning Outcomes?

The project described in this report was based on two simple premises:

- that learning is the central purpose of higher education,
- that the measurement of learning might best be achieved through the description of outcomes (what a learner knows and can do as a result of learning) rather than the more traditional description of learning input, (syllabus or course content).

The concept of learning outcomes is not original: it has been used extensively in many areas of education and has become a major feature of both the National Curriculum and of National Vocational Qualifications (NVQs) but its relevance to higher education had not been explored.

The project set out to test how far it is possible to describe the outcomes of learning in higher education in ways which could be more clearly understood by three major groups of people: students, teachers, and employers of graduates, and how these could be assessed and accredited.

1.2 Project Rationale

The rationale and impetus for this project arose from several observations and findings,

- That the notion of 'the graduate' is ill defined, and, while there is widespread agreement that there is a set of qualities which characterise a 'graduate', and which involve some kind of "balance of knowledge, skills, creative thought and motivation", it has been claimed that some students could meet the requirements of an undergraduate course without being required to demonstrate that they possessed such qualities. Previous

UDACE work[1] investigated the applications of a profile of 'capabilities' for selecting individuals without formal qualifications for admission to education and training programmes. The capabilities include, for example, critical thinking, planning skills, perseverance , initiative and others. During the final stages of the work the Director of one participating Polytechnic commented that he "*wished that he could demonstrate that the students **leaving** the institution could do all these things, never mind those entering*".

- Graduate employers, and bodies representing their concerns, suggest that many graduates do not possess the intellectual and personal skills required for employment. The majority of graduate employers do not recruit graduates for their subject expertise, but are rather seeking a generic set of intellectual, practical and personal skills which would contribute to the development of their business concerns. This suggested that the employer notion of a good graduate was in some way different from the 'academic' view. ("Higher education is primarily an intellectual preparation, it is not a vocational preparation".)
- The challenge to quality arising from changes in the structure and processes of higher education itself. With continuing expansion, and growth in numbers of alternatively qualified students in part time, modular, credit accumulation and other schemes, a graduate will no longer be so easily defined as someone who has followed a three year course of study in a single subject. Equally, the traditional approaches to teaching in HE, particularly the tutorial system, seem unlikely to survive the current plans for expansion. The absence of clear descriptions of what the notion of a graduate is makes it difficult to establish how such changes in structures are actually affecting quality.
- The need, in response to changing staff:student ratios, for students to take greater responsibility for their own learning, enabling academic staff to concentrate more on facilitating learning, and on assessment. This requires both academic staff and students to be clearer about what it is that students are expected to achieve, and they must be helped to find ways of learning and achieving the outcomes which are most suitable for them.
- The impact of changing financing structures, which increase the investment which individual students make in their own education, are likely to make them behave more as 'consumers' than 'beneficiaries' of the system. In this context, it will become increasingly important to be clear to the student what precisely is being offered by higher education in terms of personal outcomes.

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[1] The Student Potential Programme, see Otter (1989)

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1.3 Advantages

A learning outcomes approach proposes a shift of attention from structures and methods of course delivery, towards what is actually learned. This has potential advantages for higher education (and for all forms of education and training) in terms of increased flexibility, quality and learner motivation.

Accessibility

Describing the outcome rather than the process (three years full time study in HE) or input, (content, syllabus), makes it easier to consider alternative ways of achieving an outcome, recognising that people learn in different ways, places and times, and at different paces, and that these ways are all legitimate if they achieve the same outcome. It might therefore help to facilitate processes like credit accumulation and credit transfer, and the accreditation of work based learning and other learning which takes place outside the 'classroom'.

Quality

While quality is assessed only in relation to the process of higher education, any move towards greater flexibility is liable to endanger quality, and may do so undetected. The clearer specification of outcomes might make it easier to ensure that quality is protected, by ensuring that comparable outcomes are achieved, whatever changes happen to structures and processes.

Motivation

Describing higher education awards in terms of learning outcomes might help students to see degrees as a set of targets to achieve, rather than as a set period of time in which to study. More public statements of what was to be achieved would provide a better basis for students to choose programmes and modules, and enable them to concentrate on the demonstration of achievement rather than attendance on a course. Learning outcome statements could also relate more readily to the parts of a degree, enabling learners, and especially adults attending in new modes, to achieve each outcome, or sensible group of outcomes at his or her own pace and convenience.

1.4 What are Learning Outcomes?

The work of the project has helped to elaborate the initial premises and to establish more clearly what learning outcomes are, and are not; what they should include; and how they should be written.

1.4.1 Guidelines and 'Standards'

The project set out to describe the learning outcomes of a range of different degree courses. It did not set out to write a set of 'national standards' which would apply to all courses, rather it was intended to be an opportunity to investigate ways of describing and assessing learning outcomes to produce guidelines which could be used by others. Learning outcomes in higher education are not 'standards', in the sense in which the word is used in National Vocational Qualifications but they can be documented in the same way as those standards. Doing so can provide a clear and generally comprehensible description of what students are expected to know and be able to do in order to be awarded a degree.

Higher education embraces a wide range of values and cultures, even within a single institution or discipline. The project found clear differences in the learning outcomes expected and achieved by students following courses with the same name, reflecting the different objectives and teaching strategies in different HE institutions. The learning outcome statements developed by the project were intended as examples which could be included, ignored or modified by others as appropriate.

1.4.2 Outcomes and Objectives

It seemed helpful at the outset of the project to make a distinction between learning outcome statements and course objectives. The distinction is in some ways an artificial one, as some respondents pointed out. However, it did serve to make it clear that learning outcomes of degree courses can be achieved in a variety of settings other than a formal HE institution. For the purpose of the project it also helped to avoid a debate on course structures. The project working groups were drawn from institutions with very different course structures, ethos and organisation, as well as different approaches to teaching and learning. A discussion of course objectives seemed likely to lead to a series of debates about course structure and delivery, which, though important, were not the main purpose of the work.

The wisdom of the decision was confirmed by several responses to the project consultative document which pointed out that, while course aims **should** describe *"what you hope the course will achieve, a statement of what learners should be able to do (or do better) as a result of having worked through the course"* (Rowntree 1986), existing practice in writing aims and objectives for course documents falls some way short of the theory. In general the documentation of courses, where it existed, did not provide an adequate description of what a graduate was expected to know and to be able to do. Many documents were essentially a list of knowledge to be covered. A substantial majority of those responding to the consultative document suggested that learning outcome statements would be more useful to them, particularly in the accreditation of prior, and workbased, learning.

1.4.3 Outcomes and Assessment

The assessment of learning outcomes became a central issue in the project, for two reasons. The first was that learning outcome statements would be meaningless unless they could be linked to credits, and that this could only be done by way of assessment. They had, therefore to be framed in terms which made them capable of assessment. Credits had to be awarded for the successful achievement of outcomes, not for the completion of a process. One respondent to the project consultative document commented:

> *"Although the reasons for looking at learning outcomes include curriculum development, the point could be made that clearly defined learning outcomes enable a review of teaching methods **to ensure that adequate opportunities are provided***

> ***for students to practice and achieve the outcomes.*** *Teaching staff often say that their teaching is aimed at sophisticated and subtle learning outcomes, but rely on methods which do not provide opportunities for achieving these e.g. lectures."*

The second reason why assessment became a major issue was that a focus on outcomes highlighted concerns about the nature and quality of assessment because:

- the relationship between the course objectives and what was currently assessed was not always clear, and assessment was often not treated as an integral part of a course. There was little evidence of an assessment strategy in many courses, and little sharing of information about this between staff;
- the traditional forms of assessment placed a heavy burden on staff when it came to marking, the increase in student numbers was making some of these methods impractical, if not impossible;
- when intended outcomes were made explicit, it became clear that alternative methods of assessment were required and staff lacked experience or information on alternative approaches.

1.4.4 Outcomes and Credits

The project sought to create a link between learning outcomes and a system of credit accumulation and transfer. This was an essential step since it linked qualitative learning outcome statements to a quantitative system of credits which added up to a degree. The link could only be made if it was possible to describe the learning outcomes, to assess them, and to allocate a volume or value to them through credit rating.

The project used the CNAA CATS credit structure which is widely established in higher education, and sought to define the credit value of learning outcomes using the CAT credit point system.

The CATS scheme is particularly appropriate for this purpose since it provides a system of credits and levels but does not seek to define a credit rigidly in terms of hours of study or notional study time, nor does it specify the subject content, or what must be achieved to gain a credit. However, the question of how to allocate credit to outcomes, which are of differing 'sizes' and 'levels', except by the use of actual or notional teaching/learning time, proved problematic.

1.5 Project approach

The design of the project was based on a model for developing descriptions of learning outcomes originally described by UDACE[2] and shown in Figure 1.1.

This proposed that there were three distinct kinds of 'users' of learning outcome descriptions, those who learn, those who provide learning programmes, and those who pay or use the products of the process (which might be Government, individuals or employers) Each of these three has a distinct and legitimate perspective on the purposes of the education offered, its assessment and accreditation. It also proposed that an adequate description of outcomes should be able to recognise both those outcomes consciously planned in advance, and those which might arise unexpectedly as the programme progressed. Finally, the model proposed that there were three distinct kinds of assessment which might be applied to learning outcomes. In different circumstances the different users would wish to place differing degrees of emphasis on the 18 'cells' of the matrix. Some employers, for example, might be particularly interested in criterion referenced, rather than personally or norm referenced outcomes, while those selecting for admission to further study have traditionally focussed on norm referenced approaches.

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[2] *Understanding Learning Outcomes*. UDACE 1989

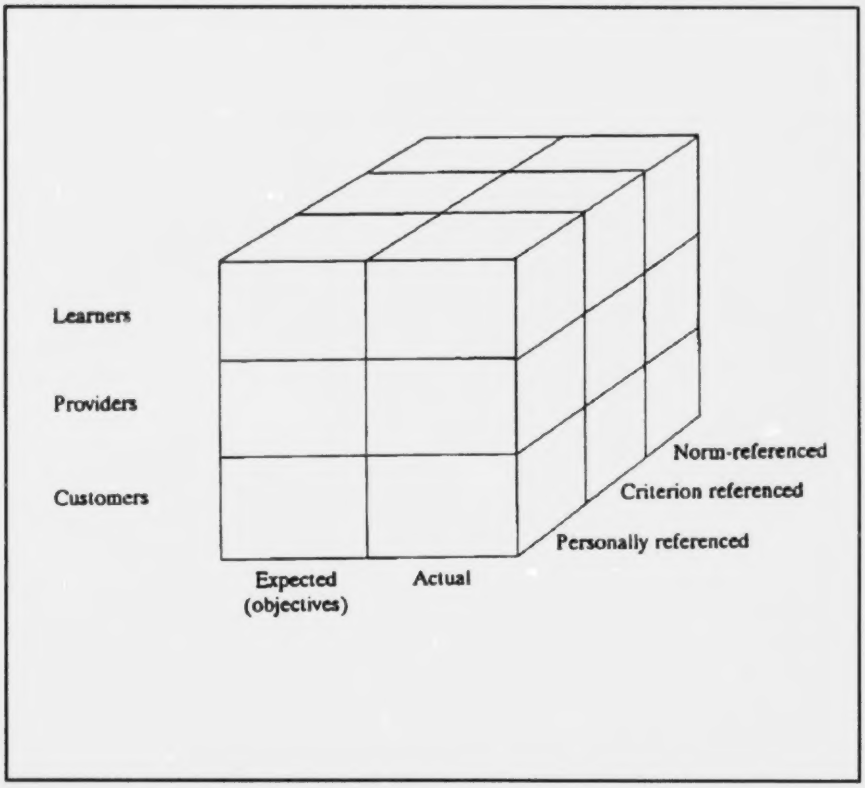

Figure 1.1 - A Model of Learning Outcomes

The project sought to provide an open and consultative structure which would permit the maximum discussion and dissemination of ideas and materials. This was based on the premise that learning outcomes should be everyday statements used and understood by staff, students and employers alike. They therefore needed to avoid specialist jargon and be owned and developed by those who would use them. The project was not intended to produce a set of "ideal" learning outcome statements written by experts, but rather to stimulate debate on what learning outcomes were, how they might be developed and used and assessed, and to produce some recommendations which would act as guidelines for others to use.

1.6 The project process: an outline

The project involved three groups of people in the definition of learning outcomes; academic staff, students and employers of graduates. The work included detailed development activity by small groups of academic staff who were subject "experts", followed by individual and group consultation with other academic staff, with students and with employers of graduates.

The project extended over a period of two years, involving 19 academic staff from 9 higher education institutions, who were primarily responsible for the preparation of some exemplar learning outcome statements and for investigating the relationship between learning outcomes, credits and assessment.

During the course of the project, over 50 meetings, workshops, and seminars were held, involving several hundred academic staff from other HE institutions.

	Employers	**Academic Staff**	**Students**
1		Institutional Consultation (November 1989)	
2		Selection of Institutions (December 1989)	
3	Employer Seminar 1. Employer Visits (April 1990)	Subject Group Work (Jan-Dec 1990)	
4		Consultative Seminar (September 1990)	Student Workshops (Nov-Mar 91)
5		Assessment Workshop (Sept 1990)	Assessment Pilots (Sep-Jun 1991)
6	Employer Seminars (Feb-May 1991)	Consultative Document *What Can Graduates Do?* to all HEIs (Jan 1991)	
7	Employer Consultative Document Issued (May 1991)	Review Workshop (May 1991)	
8		Draft Report to Steering Committee (Oct 1991)	

Figure 1.2 - The Project Process

The process of the project is summarised in Figure 1.2 and described in more detail in Appendix 1. In outline, it consisted of 8 stages:

Stage 1

All HE Institutions were invited to an initial consultative meeting to discuss the project aims and objectives and identify appropriate subjects for development work. The five subject groups chosen were Design, Engineering, English, Environmental Science, Social Science.

Stage 2

Institutions were invited to bid to participate and nine institutions were selected by the Project Steering Committee. The individuals, seconded part-time from the institutions, represented a broad cross section of academic staff. None had a formal academic background in educational research or theory. Each subject group involved staff from more than one institution.

Stage 3

Staff were given three objectives for the twelve months work:

> to develop a model of learning outcomes for their subject area
>
> to develop a way of accrediting learning outcomes
>
> to pilot methods for the assessment of the learning outcomes

The subject groups were encouraged to develop individual approaches to the description of learning outcomes, rather than to follow a single model. They were asked to consider the outcomes of degrees, rather than specific stages or levels of degree courses, and were provided with a range of background material and support though workshops and meetings.

Stage 4

A national seminar was held in September 1990 to provide an opportunity for academics from all HE Institutions to comment on the preliminary work. 93 institutional staff attended. Students were consulted through a series of structured workshops with first and final year students in each of the participating institutions. Over 500 students were involved in these workshops.

Stage 5

Academic staff were asked to develop approaches to the assessment of a range of the learning outcomes identified, concentrating on those not covered by existing assessment processes. A workshop on assessment was provided for all project staff and a range of literature and materials was distributed.

Stage 6

After the national seminar, a consultative document, *What can Graduates Do?* was distributed to all HE Institutions, individuals known to be interested in the work and those attending workshops and conferences where project staff were present. Responses were received from over half the HE institutions in the UK.

Following a preliminary workshop with graduate employers, based on *What Can Graduates Do?* a revised version was produced for distribution to a broad range of employers. 138 responses were received from employers.

Stage 7

A residential workshop was held for project staff to review the outcomes of this work and the outcomes of the consultation. The responses to the student and employer consultations were combined with the outcomes of the academic staff work into a draft report to the project steering group in the Autumn of 1991. Following further informal consultation with the project steering group and project staff the present report was completed in March 1992.

1.7 Project Staff

The project was directed by Sue Otter, UDACE Senior Development Officer for Accreditation and Learning Outcomes. In December 1990 she was appointed Head of Credit Accumulation and Transfer at Nottingham Polytechnic. UDACE is grateful to the Polytechnic for agreeing to release her part-time to complete the project and the present report.

Daffyd Thorne was seconded to UDACE from the London Institute as Project Officer for 12 months.

21 academic staff from 9 higher education institutions contributed as members of the project's subject groups. They are listed in Appendix 2.

Section 2

The Project Process

Chapter 2

Learning Outcomes: an academic staff approach

This chapter reviews some of the ideas and ways of describing learning outcomes which were used by the academic staff working in project groups.

2.1 Initial premises

The project began with a number of premises.

Aim to develop methods and examples.

The aim of the project was not so much to produce a definitive set of learning outcome descriptions as to identify effective and efficient ways of writing and structuring them and to produce guidance to assist others to describe the learning outcomes of degree programmes for themselves.

Begin with academic staff views

It seemed that the most effective way of going about this was to ask a small group of academic staff (the subject groups) to develop some examples of learning outcomes for their subjects, and to use these as a basis for consultation, with other staff, students and employers.

Work in small independent groups

The five cross-institutional subject groups (see Appendices 1 and 2), were asked to work independently in developing the learning outcome statements for their subjects. They were not given a fixed set of guidelines on how to proceed, but they were asked to record and document their progress and to develop a set of descriptions which could be circulated for wider comment and discussion. There were two reasons for choosing to work in this way:

- the project aimed to produce guidelines which could be used by other academic staff and it was generally felt that these would be best developed by small groups of practicing academic staff with direct experience of teaching and learning in HE in their subjects, rather than by external 'experts';
- it was felt that there might be several ways in which learning outcomes might be structured. Allowing the groups to work independently with few guidelines might generate novel and helpful approaches.

Examine previous material

The only examples of learning outcome statements developed for similar purposes readily available at the start of the project were provided from the USA (Alverno College publications) and from the work of the Employment Department Standards Branch.

The former were statements of a rather general nature, they looked like lists of desirable qualities but seemed not to have been derived through any analytical process. They also lacked sufficient detail to indicate the level of work and to allow them to be assessed directly.

The Employment Department work, carried out in the development of occupational standards for National Vocational Qualifications, were clearly derived from a more analytical process (functional analysis) and they were detailed enough to allow assessment, including performance criteria which were often very detailed. They were however at fairly low levels and described relatively simple tasks, they were thought not to contain sufficient detail of factual knowledge, nor of the more complex intellectual processes associated with higher education.

Develop initial guidelines

Initial consultations with the academic staff groups, suggested that learning outcome statements would need to:

> strike a balance between what graduates needed to know and what they needed to be able to do;
>
> include subject specific knowledge, as well as the methods, traditions and principles of subjects and disciplines;
>
> address the sorts of qualities sought by employers;
>
> be intelligible to students and employers, as well as academic staff, while preserving the essence of the outcome itself.

2.2 First examples

The early stages of the work showed that some outcomes were easy to describe. These often related to factual knowledge and personal skills,

> ***the student will be able to explain the major mechanisms of mammalian thermoregulation,***

> ***the student will be able to present this information clearly and succinctly in a ten minute presentation to a group of staff and students.***

Others were much more difficult,

> ***the student will be able to present and sustain an academic argument.***

> ***the ability to respond to alternative viewpoints/the ability to speculate or present hypotheses.***

There was a persistently expressed view that there were some outcomes of higher education which could not be described in these terms, including the development of personal integrity, or the process of personal growth.

Discussion and consultation showed that it was possible to improve descriptions of some of the previously implicit values thought to be imparted through higher education. Other outcomes, notably those concerned with professional ethics and moral values, were clarified through discussion with staff and students, although they were not always well captured in words.

2.3 Consultation

At the mid point of the project the draft outcome descriptions of the subject groups were collated into a publication *What Can Graduates Do?* which was circulated to all higher education institutions and others for comment. The responses addressed both the specific examples prepared by the groups, and the general principle of an outcome led approach to higher education. The range of comments is reflected in the following quotations.

> *"It is true that outcome descriptions cannot be sufficiently sensitive to adequately reflect the full range of knowledge, skills and understanding which a degree represents, or the complexity of the relationship between the parts, but that does not mean we should not try, nor that we cannot evolve an ever closer approximation to a complete description."*

> *"The definition of learning outcomes is quite acceptable. However, to distinguish between outcomes as statements rather than as a set of constructs like knowledge, competence or skill, seems to misunderstand competence statements. Similarly, the contrast made between learning outcomes and objectives does not hold up, and reveals the authors' lack of expertise in this area. Objectives do not set out to describe what a course will do but define what students can do as a result of participating in the course."*

> *"Any clearly stated and understandable set of words which can describe more precisely the complex\range of learning experiences and identifiable outcomes would be welcomed by all parties. However outcome descriptions alone may be insufficient to accurately describe the iterative process which governs the creative and intuitive harnessing of ideas into recognisable solutions."*

> *"What is common to all courses of higher education is that they are not about acquiring particular knowledge or skills but involve a very significant process of personal growth, but this is wholly ignored in your document."*

> *"Talking about learning outcomes also de-emphasizes the variety of higher-level outcomes that different students achieve at a personal level which are nevertheless compatible with successful performance at a lower level in their formal examinations and other assessments."*

2.4 Describing Learning Outcomes - four approaches

Four different approaches to describing learning outcomes were explored during the project. Some were developed and used by the groups and others are derived from work outside this project. The four approaches were based on:

Objectives	the stated intentions of the course.
Subject knowledge	the knowledge content commonly identified in syllabuses or course documentation.
Discipline	the notion of a discipline as a culture and value system to which the graduate is admitted.
Competence	what a graduate can do as a result of the degree programme, including the narrower notion of occupational competence.

2.4.1 Objectives

Existing course materials

Since CNAA course validation processes require the preparation of more detailed documentation than is common in other HE institutions, the subject groups were designed so that each would have at least one member from such an institution, with access to existing documentation prepared for course validation. All the groups were encouraged to provide and circulate this information since it contained details of aims, objectives and assessment methods which it was thought would be helpful in developing learning outcomes.

Although some of this information was circulated, only one group (Social Science) actually used course documents as a basis for discussion. One other group (Engineering) used course documentation to determine the number of hours, and the assessment weighting of each of the course components from each of the three institutions.

The observation that these documents were not as useful as had been expected was initially surprising. However, reviewing the course documents now, against the outcomes described by the groups, it is clear that many of the aims and objectives presented are considerably less detailed and comprehensive than the learning outcome statements. This does not suggest that learning outcomes are in some way superior to objectives, nor even that they are fundamentally different. Rather, it suggests that existing approaches to writing course aims and objectives can be improved, and that thinking about the course in terms of outcomes can be helpful. It might also suggest that the preparation of aims and objectives by course teams and committees has sometimes carried out more to meet the requirements of validation, than to serve the purpose of developing teaching, learning and assessment strategies. Subsequent comment from HE institutions on the consultative document *What Can Graduates Do?* provided conflicting responses on this issue. There were suggestions both that aims and objectives were indistinguishable from learning outcomes and that they were viewed simply as a formal requirement for validation.

Bloom's taxonomy

One of the background documents which was circulated to group members at the start of the project was a summary of Blooms Taxonomy of Educational Objectives (1964) [3]. This was also referred to by many correspondents. Although the title and nature of this work were familiar to some of the group, few were familiar with its content, although most had played some role in developing and writing objectives for the courses they taught.

The Taxonomy was initially useful in providing a standardised language (a set of action verbs in a hierarchy). These could be included in the outcome statements and their meaning was clearly understood by everyone. For example, those outcomes which had previously read "the student will have a knowledge of", could now be rewritten as the "the student will know, understand and be able to apply", or "the student will be able to analyse" (by implication this included, know, understand, analyse, and synthesise). Group members were encouraged to use the Bloom language to clarify their learning outcome statements.

Some verbs were particularly confusing, although some of this confusion did not become apparent until the groups were asked to look at ways of assessing the outcomes. It then became clear that they were too vague, and did not provide enough detail to allow a judgment as to whether a student had achieved them or not. "Know" and "understand" were especially difficult, as were "have a knowledge of", and "be acquainted with". For example, the Design Group identified the following learning outcome:

understand aspects of the law as it applies to designers

The problem with this statement centres on the use of the word "understand", which does not make clear whether the student is expected to know in detail, or know in general, or know and be able to apply. In discussion it became clear that the outcome was in fact as much concerned with knowing how to find out about specific aspects of the law, as with knowing and understanding its implications. The word "understand" was understood by the course staff, but potentially misleading to students and others.

Other problem expressions included "have a grasp of", and "develop a working knowledge of". Clarification of these expressions was achieved through discussion with staff in the subject groups and with students. Discussions with the latter group proved to be productive and helpful, although it was clear that however well the staff felt that the outcomes were described, the students continued to seek further clarification.

The groups developed various ways of clarifying the precise meaning of the learning outcomes they produced for *What Can Graduates Do?*. Some used the work on assessment to provide details of exactly what a student was expected to do, others used the teaching methods and processes to clarify what they required.

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[3] See Note 1.

In some cases, the description of the teaching/learning process helped to clarify the outcome itself. For example the Social Science Group produced the following:

Knowledge of the present day functioning of major social institutions

There were various ways in which this could be developed more precisely, these involved using work experience to collect information on a series of previously agreed questions, developing case studies as a class exercise, and researching information for project work. Clarifying the process to which the outcome related helped to clarify exactly what the student was being expected to be able to do. Students were clearly expected to be able to find and analyse information rather than simply read a set text. The outcome also called for the ability to analyse, evaluate and compare the functioning, and these questions could be examined with reference to social issues in general, or in particular. A student might also be required to speculate about future trends or consequences. The group felt that the nature of assessment and the criteria for judging student achievement of the outcome would vary between, and possibly within an institution, and that in general the outcomes should be discussed with groups of students in order both to clarify the meaning and agree criteria for assessment.

An alternative application for the Bloom Taxonomy was suggested by some later work on credits and levels, where it was suggested that the Bloom's action verbs could be used to describe learning outcomes at various levels. Level one for example, would include knowledge and comprehension, Level two analysis and synthesis and so on. The suggestion was dismissed by the groups as being too simplistic: analysis, for example, was believed to be just as much a feature of Level 1 as it was of Level 3.

Carter's taxonomy

A second document was Carter's *Taxonomy of Objectives for Professional Education* (1985)[4]. This proved to be very valuable to the Engineering group, whose first draft of learning outcomes had been sharply criticised for its heavy emphasis on factual knowledge.

The Engineering group initially presented their learning outcome statements in a series of headings. One of these was Processes and Materials, within which was Manufacturing Methods, including the following outcomes:

A student would be expected to:
- select and reject manufacturing processes to produce a specified component economically,
- plan the sequence of the processes required for the manufacture of the component,
- propose tests and quantify the results for the quality and reliability of the manufactured components,
- use statistical methods for quality assurance,
- program for computer aided manufacture and materials handling.

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[4] See Note 1.

The Engineering group found the taxonomy helpful and produced a second draft using the Carter structure, which set these very detailed outcomes in a broader framework, and added a dimension of personal qualities to the first drafts. Examples of the learning outcomes produced are described below.

Mental Skills
Identify Relationships between pieces of information
- analyse forces and stresses within an engineering mechanism or structure,
- analyse transducer specifications to ensure satisfactory automated systems response,
- calculate tolerances on components.

Personal Qualities
Attitudes and Values
Demonstrate an awareness of strengths and weaknesses
- set and meet realistic goals for personal performance
- seek assistance in remedying areas of weakness

The structure did however have some drawbacks. The resulting detailed statements were repetitive, and some outcomes could be included under several headings. The structure might be more helpful used less rigidly, perhaps as a series of prompt questions or, as the Engineering group used it, as a basis for reviewing a set of learning outcomes to ensure that all aspects were included.

2.4.2 Subject Knowledge

A second approach was to examine what was being taught on existing courses, and to attempt to convert this into outcome statements. This inevitably began with a description of subject knowledge. However there was debate about the degree to which the acquisition of knowledge was itself the outcome, rather than the implicit cognitive skills which individuals developed through acquiring it. Groups varied in their approaches to this question. Some began by grouping and listing factual knowledge under a series of headings, while others began by looking for cognitive and affective skills. An early draft produced by the Engineering group listed factual information as learning outcomes and was extensively criticised at the Consultative Seminar held in September 1990.

For example, some typical learning outcomes taken from the paper produced by the Engineering group for the consultative seminar included:

- calculate energy values and forces present when electromagnetic induction is produced by interacting electric and magnetic fields
- use complex numbers and phase diagrams to calculate values when using AC circuits
- design an amplifier circuit and be aware of its characteristic-

The document contained several hundred statements of this kind and was generally thought to be "too factual". Several commentators at the consultative seminar, suggested that it was necessary to integrate the practical skills and competences with the knowledge, rather than simply listing them separately.

The group also developed a series of diagrams to relate areas of knowledge. Figure 2.1 is an example drawn from the early work of the group.

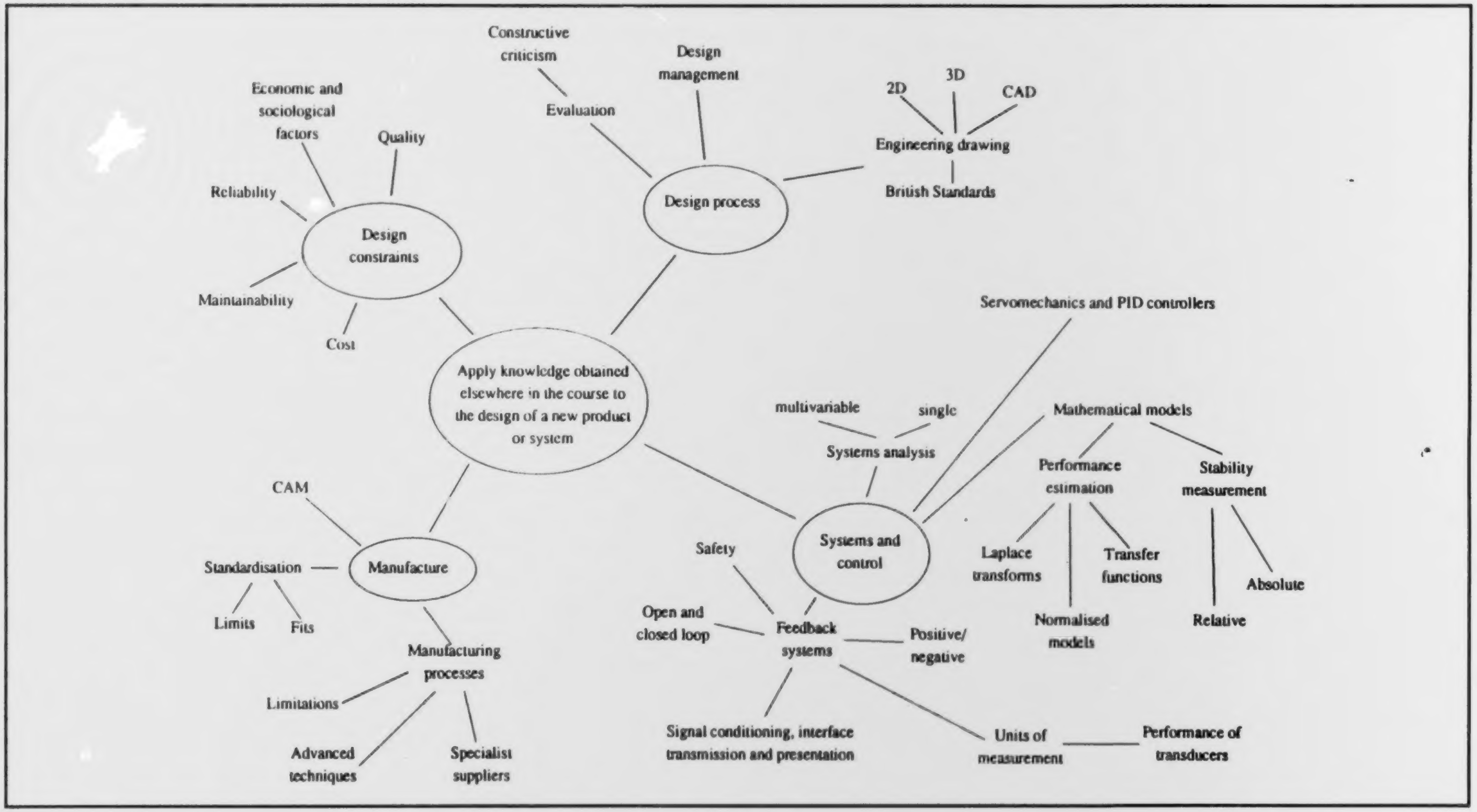
Constructive criticism
Design management
Economic and sociological factors
Quality
Evaluation
2D
3D
CAD
Engineering drawing
British Standards
Reliability
Design constraints
Design process
Maintainability
Cost
Servomechanics and PID controllers
Apply knowledge obtained elsewhere in the course to the design of a new product or system
multivariable
single
Mathematical models
Systems analysis
Performance estimation
Stability measurement
CAM
Systems and control
Safety
Laplace transforms
Transfer functions
Absolute
Standardisation
Manufacture
Limits
Fits
Open and closed loop
Feedback systems
Positive/ negative
Normalised models
Relative
Manufacturing processes
Limitations
Advanced techniques
Specialist suppliers
Signal conditioning, interface transmission and presentation
Units of measurement
Performance of transducers

Figure 2.1 - Engineering: a Knowledge Map

The Environmental Science group on the other hand tried to identify the underlying cognitive skills using past examination papers. At the same consultative seminar, the Environmental Science learning outcomes were criticised for being too general (they could apply to any graduate) and for not containing enough specific factual detail about Environmental Science.

For example, the document listed outcomes under nine headings based on types of student activity. The outcomes included:

Fieldwork
- ***use scientific equipment correctly and appropriately***
- ***plan and carry out a sampling strategy in the environment***
- ***record filed observations as accurately as possible***
- ***appreciate the difficulties of operating equipment in the field and the inaccuracies which may result, etc.***

The debate about the relationship between knowledge, as lists of factual information, and cognitive skills, posed some interesting questions about the extent to which students understood the implicit cognitive skills they were expected to develop. It was not clear from the subsequent consultatiion that these were the skills which students themselves expected to develop as a result of a degree course. It was equally not clear that courses were designed to develop, or give students opportunities to practice these skills. This point became more apparent when methods of assessing outcomes were considered later.

It appeared from the responses to the consultative seminar, that learning outcomes needed to fall somewhere between lists of factual information and lists of cognitive skills removed from a subject context. Both the Engineering and the Environmental Science groups subsequently developed their learning outcomes in a structure which separated factual knowledge from practical and personal skills. The Engineering group opted to use the Carter Taxonomy for this purpose, and the Environmental Science group followed a similar structure. Both structures proved to be problematic when the groups were asked to think of ways of assessing the outcomes. It quickly became clear that the personal skills and competences were not separable from the context of the subject, and were often better used as criteria for the assessment of the factual knowledge. For example a learning outcome might describe an area of knowledge which a student was expected to "know, and understand". When asked "how will you know that the student knows/understands this", the response was almost invariably that s/he was required to communicate this information (orally or in writing), or apply this information (to the solution of a problem), or use it as evidence in the development of an argument or hypotheses, or to illustrate a point in debate. In practice, therefore, a range of personal communication skills were being assessed alongside the specified knowledge.

Further discussion raised some interesting questions about why a student was required to know certain things, and how these related to the course as a whole. There were clearly several categories and priorities, some things were "vital to know, and fundamental to the understanding of the subject", some "were useful" and some simply "interesting".

The responses to the consultative document continued the debate about the place of knowledge. Some suggested that:

> *"the capacities our graduates develop should be related more specifically to a wide range of historical texts".*

and others:

> *"What bothered me the most about the English section - and indeed about a focus on learning outcomes/competence generally - is the almost complete absence of talk about knowledge. This seems especially inappropriate with respect to teaching and learning in HE (and indeed there is correspondingly very little attention paid to teaching too)......critical thinking, interaction, personal and social outcomes are of course important in any course or degree in English, but surely so is having studied a (some) range of literary texts, and having attempted to understand them in their own terms and in the cultural/historical circumstances of their production".*

A further series of responses suggested that the statements should attempt to describe outcomes which were at a more generic level and applicable to a range of subjects/courses. Specific detail could then be added to each outcome using an illustrative statement. This idea found favour with several correspondents:

> *"This is a highly desirable system. It is also consistent with current thinking about the nature of transferable cognitive abilities and skills. I would go so far as to argue that it is when we have learned to generalise sufficiently to take a learning outcome away from one specific context, that we are at the heart of the ability which we look to see learners acquiring".*

2.4.3 Disciplines

A third approach started not from the content, or the course objectives, but from the notion of a discipline. This asked the question "what is a Social Scientist or an English graduate?"

Several groups (notably Social Science and English) debated the nature and ethos of their subjects, and what they understood by 'disciplines', and used these debates to inform the writing of their learning outcomes. These groups clearly felt that knowledge was not just a "body of irrevocable truths" (Schwab 1962) but was concerned with patterns of procedure, methods of enquiry, and ways of distinguishing relevant and irrelevant information, and that there were subject specific differences which could be probed and described in more detail. There was an entirely different approach to factual knowledge, and the amount of 'essential/ need to know/cannot graduate without knowing this' information was much less. What proved to be much more difficult was arriving at a clear definition of the underpinning structure, the methods of enquiry and the procedures. These things were clearly implicit in the discussion between subject specialists, but often difficult to explain, in other than superficial terms, to a non specialist.

The composition of the groups made the exploration of some of these questions difficult, since there was not always a consensus about the terms 'discipline' and 'subject'. Discussion did however expose other useful points related to learning outcomes and course structure. Some of the degree courses represented were single subject courses, while others were modular and interdisciplinary. There were therefore tensions and conflicts within some of the groups. This was most pronounced in the English group which included courses in English, in Communication Studies and a combined degree in English and History. Where the degree was a linear course, concerned with the study in depth of a single subject, the learning outcomes seemed necessarily to include ones which related to the structure and methods of enquiry of that subject. This was less clearly established in some of the modular degrees where several different subjects were studied together. This particular group faced a further problem in that the ethos and methods of enquiry in English were quite different from those in Communication Studies. This resulted in an uneasy compromise which was reflected in the diversity of responses to the consultative document, one described the learning outcomes in English as 'mythic constructs', while others were very positive,

> *"The contributors have striven to view learning outcomes in an objective, almost scientific spirit, and the results are most useful and impressive. The distinction made between higher level outcomes and median outcomes is well conceived, as is the outline of learned competency".*
>
> *"The university study of English Literature involves many of the skills enumerated, though not particularly the forensic and managerial skills mentioned in points 28-33 (communicative competences) and 36 (networking and finding information)."*

The idea of developing outcome statements from an understanding of the discipline was used most successfully by the Social Science group, who sought to describe generic outcomes which could be used across different subjects (psychology, sociology), rather than attempting to describe outcomes for each subject. This group was one of the few which chose to work through course documentation, and an early draft of materials described the following:

> ***There are six elements to the first year programme. Our method in considering them was to avoid specifying curriculum content unless it was clear that the learning outcome aimed for, or specifically demanded, knowledge or definite material.***
>
> ***We found that almost always the material with which the course was ostensibly concerned was a vehicle aimed at introducing or applying broader theoretical perspectives.The real learning outcomes aimed at therefore had to do with mastering the essence of theories, distinguishing one theory from another, understanding the parameters underlying the whole range of theories and, most importantly being able to apply different perspectives dispassionately to social phenomena. It was apparent that implicit in the knowledge based outcomes were a variety of cognitive skills:***
> ***- factual knowledge;***
> ***- understanding (ie knowing why a certain question is relevant to the discipline etc);***
> ***- tools of thought (vocabulary);***
> ***- awareness of the dimensions of debate;***

- awareness of the possible fields of application of the discipline.
Along with these cognitive skills came personal qualities involving:
- a high valuation of logic;
- tolerance of the complete relativity of both social phenomena and theory;
- a readiness to set aside presuppositions and prejudices about the "real world";
- a readiness to see "taken-for-granted facts" as actually problematical.

There are alternative views on the structure of knowledge which rely on the relationship between knowledge and the use of knowledge, and are derived from studies of professional and post experience education. Some of these were proposed in responses to consultation, although none was applied during the project.[5]

In the end some groups used factual knowledge as one of a series of headings in describing their learning outcomes, (Engineering and Environmental Science) while others used knowledge processing or cognitive skills as learning outcomes and factual knowledge to put the cognitive skills into a subject specific context (English and Social Science).

2.4.4 Competence

The fourth approach focused around the notion of competence, asking the question "what can a graduate do?" This stimulated extensive and heated debate with many correspondents, mainly related to the use of the term by the National Council for Vocational Qualifications and the Employment Department in relation to the then new national vocational qualifications. There was widespread confusion and ignorance of current developments, and many people were unsure about the distinction between competence as a broad set of abilities which could be applied in a range of settings, and **occupational** competence, which was being developed as a much narrower description of what a person was required to be able to for employment in a specific occupation. There was concern that the notion of occupational competence was inappropriate in higher education and a number of correspondents were concerned that the project might be a "covert attempt to take higher education down the same route".

Two major issues caused concern:

- **vocationalism**, the fear that important dimensions of higher education, which relate to the development of the person and to the transmission of cultural and social values, would be lost in the pursuit of short term, work related, value systems.
- **reductionism**: that the analytical techniques which break learning into smaller pieces inevitably lead to the neglect of those qualities which we understand as 'subject', 'profession' and 'discipline'.

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[5] See Note 1.

> *"Assessing outcomes is a very useful device, and it is important to publicise and maximise good practice. But it is also important not to overlook the process of education, and its role in personal development, or in the development of personal attributes and qualities that are not as easily defined as are some skills. It would be unfortunate if a focus in outcomes unwittingly led to a reductionist view of the opportunities (and dare one say enjoyment) which should be inherent in the student's educational experience."*

Since it is clear that, at some level, most people believe that being a graduate represents some kind of broad competence, it was clearly important to seek ways of distinguishing a broad notion of competence from occupational competence and to search for acceptable ways of describing competence in relation to subjects and academic study, as well as in relation to employment. This was one of the reasons for involving graduate employers in the work, since it was felt that they could help in the definition of a broad set of competences which were related to work but which were not occupationally specific.[6]

Problems

All the groups experienced problems in developing a rounded and detailed description of graduate competences. Apart from the Design group, which analysed the design process in detail in order to identify its learning outcomes, none attempted a systematic approach to describing a complete set of competences.

Several problems were identified in discussion and responses to consultation:

- it was relatively easy to identify broad competences in general terms, but some people thought that these were 'trite' although others thought it was important to include them to ensure that the obvious was not overlooked. This view was supported by the responses to the consultative document, several of which suggested that "listing the bread and butter" was an important first step,
- even if the competences could be described there were difficulties with assessment, and the groups were generally vague about standards - what constituted good, or not good enough performance of a competence. This was in part related to a confusion between competences, which could be learned and developed, and 'fixed' personality traits. The example of a first class graduate with poor oral presentation skills was quoted several times, by correspondents who believed that the ability to communicate was a fixed trait rather than a developable competence.
- some people believed that "these sorts of things should be developed in school", and that they were "not the responsibility of higher education".
- some people argued that competences were of secondary importance and that although it was desirable to have them, a student would not fail if s/he did not. Other responses to consultation suggested quite the reverse

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[6] This issue will now be partially addressed in the development of general National Vocational Qualifications

and described graduate competences as "key to the whole concept of learning outcomes".

Group approaches

The groups approached the inclusion of competences in various ways:

The Design Group analysed the design process in order to identify the competences and the specific knowledge they required. They were careful to avoid specifying a particular process or sequence, and were helped in doing this by the inclusion of two and three-dimensional specialists, and a specialist careers adviser.

The Environmental Science Group looked at the various learning activities, tutorials, field work etc. which students were required to participate in, and identified the competences they were expected to develop through them.

The Social Science Group undertook some functional analysis work with a group of "professionals". This was useful, not because it provided an exhaustive list of competences, but because it provoked a debate on values and ethics, and identified the need to identify and work within the values of individuals and organisations as an essential competence for social workers.

The Engineering Group used the concept of a 'good graduate' to develop a set of competences for inclusion in their learning outcomes at an early stage of the project. Most of these were lost from the drafts of learning outcomes developed initially but some were reinstated later.

The English Group developed a competence model for communication studies. Figure 2.2 is an early example of such a model.

An alternative approach not explored directly in the project was suggested by the work of Klemp (1974) and Elliott (1990), Klemp used an empirical approach to describing the competences developed in post secondary education analysing the distinctions between exceptional and average performers.[7]

Functional Analysis

In the development of techniques for outcome description in vocational qualifications the Department of Employment has evolved a form of functional analysis which offers a systematic hierarchical approach to competence. This approach was relatively new and unfamiliar to the project groups, they were therefore offered a workshop to introduce them to the methods and ideas.

Functional analysis is a systematic and logical approach to describing an occupational role, in order to produce 'standards' which are used for the award of vocationally specific qualifications. It begins with the definition of a 'key purpose' for an occupational role, which is then disaggregated first into 'units', and then to 'elements', by asking the question, "*what needs to happen for this to be achieved?*" (Mansfield 1989). This develops a hierarchical structure at the bottom of which each element is accompanied by a set of performance criteria for assessment through which an individual can be recognised as competent.

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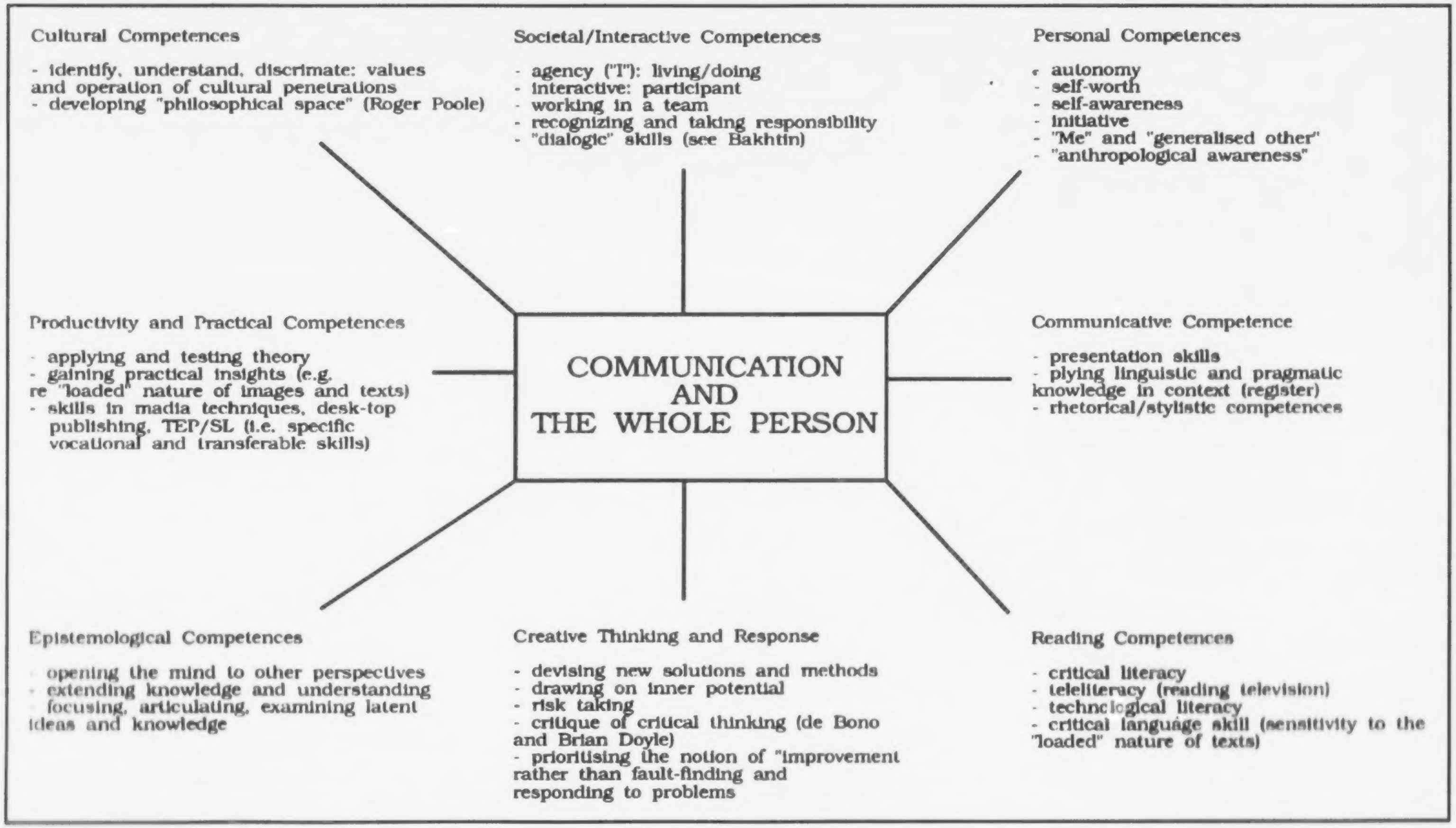
[7] See Note 1.



Cultural Competences

- identify, understand, discrimate: values and operation of cultural penetrations
- developing "philosophical space" (Roger Poole)

Societal/Interactive Competences

- agency ("I"): living/doing
- interactive: participant
- working in a team
- recognizing and taking responsibility
- "dialogic" skills (see Bakhtin)

Personal Competences

- autonomy
- self-worth
- self-awareness
- initiative
- "Me" and "generalised other"
- "anthropological awareness"

Productivity and Practical Competences

- applying and testing theory
- gaining practical insights (e.g. re "loaded" nature of images and texts)
- skills in madia techniques, desk-top publishing, TEP/SL (i.e. specific vocational and transferable skills)

COMMUNICATION
AND
THE WHOLE PERSON

Communicative Competence

- presentation skills
- plying linguistic and pragmatic knowledge in context (register)
- rhetorical/stylistic competences

Epistemological Competences

- opening the mind to other perspectives
- extending knowledge and understanding
- focusing, articulating, examining latent ideas and knowledge

Creative Thinking and Response

- devising new solutions and methods
- drawing on inner potential
- risk taking
- critique of critical thinking (de Bono and Brian Doyle)
- prioritising the notion of "improvement rather than fault-finding and responding to problems

Reading Competences

- critical literacy
- teleliteracy (reading television)
- technological literacy
- critical language skill (sensitivity to the "loaded" nature of texts)

Figure 2.2 - A Competence Map of Communication Studies

The functional analysis workshops provoked a mixture of curiosity and hostility. Apart from the concern with vocationalism and reductionism there were three principal concerns:

- the direct link between the current applications of functional analysis and specific occupations. This was problematic because students in all the subjects subsequently took up employment in a wide range of occupations, it was therefore in some cases difficult (Social Science), and in others impossible (English) to define an occupational role: and none of the academic staff saw their courses, or their learning outcomes, as direct vocational preparation. The fact that a functional approach seeks to be all embracing makes it difficult to recognise such a diversity of outcomes.
- the narrowness of the approach. Here respondents felt that it produced detail of the "here and now" of the occupational role while they were concerned to provide their students with a more generic set of intellectual processing skills which would enable them to respond to the less predictable needs of the future.
- the apparent difficulty of accommodating questions of values, and the dilemmas, contradictions and constraints which were present in all "real-life" situations. Some respondents felt that there seemed to be no place in functional analysis for the kind of "mental balancing act", which resulted in good decision making and judgment at professional levels.

The workshop provided a valuable forum for discussion and development, one group (Social Science), subsequently held a functional analysis workshop with a group of professionals from the social sciences. This produced two contrasting key purposes.

To provide high quality information about the social composition of society and about social trends found within society, so as to enable government policy formation and business decision making to be both effective and legitimised.

To appraise social situations, events, institutions and individual social behaviours, in terms of its sources in interpersonal or societal factors.

The contrasting nature of the statements reflected the fact that the group did not perceive Social Science as a single subject, and had varying academic and professional experience. They also observed that the nature of social science itself, particularly the contestability of all social judgments made it difficult and perhaps undesirable to define a single key purpose. However the exercise of attempting to develop one had been a useful experience. This led the group to attempt to define a set of generic learning outcomes which could be applied across all the subjects which made up social sciences. The group saw these as a basis for individual institutions to develop in their own way, reflecting their separate subject specialisms. They chose to illustrate the generic outcomes with reference to specific subjects, in order to demonstrate their applicability.

Knowledge of the elaborations and underpinnings of the main perspectives within the relevant social scientific and other disciplines, and the ability to use this knowledge to perceive the underlying dimensions that differentiate theories and explanations.

Taking psychology as an example; in becoming aware of the spectrum of psychological approaches (socio-biology, cognitive psychology, psychoanalysis, behaviourism etc), a student will partly be able to understand each of the theories by relating them to the others. In the process the student will attain the understanding of the parameters that distinguish them. The same sensitivity to significant differences of perspective will operate throughout the social sciences, so that in sociology, a student would be expected to be able, for example, to identify, and then assess the consistency of a functionalist account of deviant behaviour; and thereafter appraise that account utilising both the strengths and weaknesses of functionalist accounts in general, and knowledge of other/rival cognate perspectives.

The responses to this approach from the consultative exercise were generally positive,

> *"These are comprehensive and interesting, the examples are sensible."*

although the key statements were extensively criticised.

> *"I would delete the words "government" and "business" from social science key statement one. It seems unduly restrictive, if perhaps politic, to see social science as serving these two masters only."*

None of the other groups chose to follow this pattern of working. The Engineering group did carry out some functional analysis work, but this produced a very broad set of statements, which the group found difficult to relate to the separate engineering subjects, and and they did not pursue the idea further.

The remaining groups looked at writing key purposes or statements, but they almost invariably produced an aim or objectives for their courses rather than a key statement. This was helpful to them, often not because it generated a useful statement but because it focused the groups attention on defining what their courses were for, and it helped to expose some of the implicit aims of the members. In practice, the learning outcomes subsequently described by the groups did not relate to the key purpose, nor did the groups use the statement as a check on the inclusiveness of their outcome statements.

In general the consultative exercise suggested that some people found the key statements useful, while others found they distracted from the outcomes.

> *"I did not find the key statements useful. I suspect that much time can be spent trying to obtain agreement on a statement which can then mean very different things, even to the parties to the agreement. It is when we sit down and try to work out what we are talking about, in terms of level 4 (that is the learning outcomes), that definition really emerges and can be honed to precision."*

It appears that they may be a useful vehicle to stimulate discussion, but may not be an essential step.

The functional analysis documentation did provide useful ideas on the writing of outcome statements, for example it was helpful to write learning outcomes as short statements containing a subject, object and verb, and to accompany these with a series of short phrases which qualified the outcome and provided information relating to the level and the standards which would be sought in assessment.

2.5 Conclusions: a staff approach

The learning outcomes developed by the groups of academic staff were arrived at through a process of discussion and consensus, rather than by a single method of structured analysis. This does not suggest that analytical approaches do not exist, but that the groups did not choose, or find, single models appropriate for their purposes. They did establish that a variety of methods can complement each other. Useful approaches included the taxonomies of Carter and Bloom, the knowledge structures of Eraut and Klemp, the Kolb Learning Styles Inventory, and functional analysis. The language of describing outcomes was particularly helped by reference to Bloom, but the most important factor in achieving clarity and precision was the requirement to assess the outcomes.

The work on competences and learning outcomes was intended to be exploratory testing a variety of approaches, and did not seek to provide complete single models for any individual degree programme. Neither did it seek to produce a complete set of generic graduate, or subject specific outcomes. It did help to distinguish the notion of graduate competence from the definition of occupational or vocationally related competence, and this was a useful step. Subsequent work on assessment and accreditation showed that it was not helpful to separate the description of graduate competence from the description of subject knowledge. In some respects this accords with the approach taken by NCVQ in developing occupational standards, although it is clear that knowledge in HE is more than merely 'underpinning', and the rationale for the inclusion of subject knowledge certainly not simply one of possible vocational relevance. These findings contributed subsequently to discussion on the coherence of degree awards and it seems likely that the question of coherence and balance needed to be debated at an earlier stage.

Various approaches to writing and structuring description of learning outcomes emerged from the first stage of the work of the subject groups. The Design group found that the design process was the most convenient way of grouping sets of learning outcomes developed by brainstorming and consultation. The Engineering group used a structure which had separate categories for knowledge, skills and competences, Environmental Science followed the same route. Both English and Social Science separated intellectual skills (critical thinking) from personal skills and from other so called competences.

The following stages of the work suggested that it was not helpful to separate out learning outcomes under headings like knowledge, skill and competence., since, although all the groups began by separating learning outcomes concerned with knowledge from those concerned with competence (Engineering and Environmental Science are both good examples), the separation eventually led to problems when ways of assessing learning outcomes were considered. It was impractical to assess competence separately from knowledge, since knowledge acted as a vehicle through which the competence was demonstrated. Similarly the assessment of knowledge invariably required the demonstration of some sort of competence in communication, however defined.

Later work suggested that an earlier consideration of the question of the relative value of the outcomes would have been useful, as would a more detailed consideration of questions of balance and coherence.

Despite the difficulties and anxieties outlined above in the last meeting of the groups prior to the publication of the consultative document *(What Can Graduates Do?)* an attempt to systematise the learning outcomes was made by introducing a series of levels. These were not levels of attainment, but were intended to be stages in the description of a learning outcome. The structure proposed that the first stage was the writing of a key statement or purpose, which might combine the notion of a good graduate, and the underlying ethos and values of the subject. The second stage broke this down in to three broad categories, skills, knowledge and personal qualities or competences, the third stage separated these into major activities or areas of the subject, the fourth level gave rise to learning outcome statements and the fifth to statements describing what a student must do to demonstrate the learning outcome.

Responses to the consultation suggested that people found this useful, although some found it too complicated and proposed a reduction in the number of 'levels'.

Learning Outcomes at Five Levels

Level	Design	Engineering	English	Environmental Science	Social Science
1	2 key statements for design and design education	"A good engineering graduate"		A key purpose for the course	Implicit values of the discipline
2		Personal Qualities Skills Knowledge		Knowledge Practical Skills Personal Skills	Intellectual Personal Communication Collaboration
3	5 Major Activities	10 Clusters of Competences	4 Clusters of Competences		
4	69 Learning Outcomes	37 Learning Outcomes	36 Learning Outcomes	29 Clusters of Outcomes	25 Learning Outcomes
5		Clusters of Standards		Clusters of Standards	

Figure 2.3 - Learning Outcomes : Levels of Analysis

Chapter 3

Learning Outcomes: student and employer views

This chapter describes the consultation with students and graduate employers. It provides a brief analysis of the processes and findings and draws conclusions from these.

3.1 Collecting student views

The student views on learning outcomes were collected through a series of structured workshops[8]. Students worked in groups to produce descriptions of expected outcomes (in the case of first year students), and outcomes achieved (in the case of final year students). The workshops generated an enormous amount of information, and demonstrated the differences between student and staff perceptions of higher education, but this work did not contribute directly to developing ways of writing learning outcome statements.

3.1.1 Evaluating the workshops

The students welcomed the novel and helpful opportunity to participate in the discussion of what they were expected to achieve. The outcome approach also enabled them to play an active part in the discussion of assessment, and this, in itself, helped them to clarify what they were expected to achieve.

The workshops provided an effective structure for exploring student views but demonstrated that students could not, without extensive support and discussion, write their own learning outcomes *ab initio*. They were, however, able to describe vocational and personal outcomes in greater detail than the staff. These outcomes agreed closely with the responses made by employers. Overall, students and exployers appeared to have more in common in their expectations of higher education than either did with academic staff.

Students described relatively few of the outcomes listed by the academic staff groups. The fact that they described neither factual outcomes, nor generic competences and cognitive skills suggests that they may not be aware of, or understand with sufficient clarity, some of the implicit expectations of academic staff, but they do have a much clearer perception of the qualities sought by graduate employers.

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[8] Project methodology is outlined in Appendix 1

3.1.2 Analysing the student responses

The student descriptions of learning outcomes were analysed against the educational orientation categories described by Taylor (Marton et al 1984) This showed 46 % of the outcomes were in the personal and social category, 39% in the academic category, and 15 % in the vocational.

In all, 45 different "types" of learning outcome were identified. These ranged from acquiring analytical skills and critical thinking, to developing IT and library skills and increasing self esteem and independence. The most frequently identified outcomes were:

enhanced career options

increased independence

increased self esteem

acquire a broad base of skills/techniques

increased knowledge

cirical thinking

Few of the student outcomes related to specific academic subjects.[9]

These findings agree with a CBI Gallup poll of students at the point of entry to higher education (CBI 1991), in which 64% of the students interviewed said that they expected higher education to develop their personal and social skills. It is clear that students expectations from higher education differ significantly from those of staff. As Entwistle suggests[10]:

> *"Tutors often seem to expect students to have the same interest in academic goals as themselves. In fact, students vary very markedly in their goals and purposes*
>
> *..students enter higher education with vague, perhaps unrealistic, but genuinely high expectations of the learning experience."*

but as Percy and Salter point out:

> *"Ideas of academic standards, pursuit of excellence and scholarship are not among the constructs through which students evaluate the process of higher education.*[11]

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[9] The 45 types of outcome are listed in Appendix 6 together with illustrative examples.

[10] Entwistle 1990

[11] Percy and Salter 1976.

3.1.3 Student views: overall findings

The date provided from the workshops proved to be useful in two ways. Firstly it suggested that students were well able (more able than their tutors expected) to articulate their expectations of their degree courses. Secondly, the workshop structure developed for this project was simple and robust and generated discussion and opinions which could readily be used as part of a student consultative process. The data itself contributed to the development of a 'model' which was used as an intermediate step in relating learning outcomes to credit structures.

3.2 Collecting employer views

3.2.1 Methods of consultation

Consultation with employers was achieved in several ways, firstly by a large circulation of materials to members of the Association of Graduate Recruiters, secondly through a smaller circulation of employers of Design graduates. There were also interviews and discussions with individual employers, and several employer representatives took part in some of the academic staff discussion sessions.

An initial consultative workshop, involving a small group of employers[12] was used to edit *What Can Graduates Do?* to produce a short version which was sent to 500 graduate employers.

3.2.2 The general and the occupationally specific

Workshop participants were clear that many employers were looking for a generic set of "graduate" rather than occupational competences. They were not concerned with the subject and often the class of the degree. Some employers used sophisticated selection techniques to identify the competences they sought, while others tended to rely on more general and impressionistic methods. It was therefore decided to edit the consultative document, presenting the information in two sections, the first described a set of 'common learning outcomes'. These were simply learning outcomes which occurred in each of the five subject areas and did not claim to be complete or comprehensive. They were the ability to,

access and select information

synthesise and interpret information,

---

[12] The group comprised representatives from, Rover Group, Tioxide UK, WH Smith, GEC Alsthom, DEC Limited and the Association of Graduate Recruiters.

demonstrate self discipline (e.g. in managing time)

manage personal stress

communicate clearly and accurately

work co-operatively

work alone

accept criticism

understand own strengths and weaknesses

act ethically

possess basic computer skills.

An edited list of the outcomes from each subject area was also included. The intention was to simplify the document and make it more accessible to a non academic readership. Despite this many correspondents found the document over complicated.

> *"We all believe that the project is commendable, but the questionnaire comes across as academic overkill."*
>
> *"I found some of them incomprehensible"*
>
> *"The learning outcomes are described in many cases in terms that I find hard to relate to the day to day reality of graduate recruitment selection and employment. In a few cases I am even unclear as to the meaning of the tangle of words."*
>
> *"Overall I feel that the tone of the document is rather academic."*

3.2.3 Personnel and line managers

It also became clear during the workshop that graduate recruitment was often carried out by personnel staff, but that the learning outcome disciplines might be much more useful to a line manager. The workshop group also felt that it was the line managers of young graduates who could best contribute to the development of learning outcomes, since they had direct experience of the skills, qualities and specific knowledge which were required. There were however likely to be significant problems in contacting such people within organisations. This fear proved to be well grounded, and although letters and accompanying materials clearly requested responses from line managers, the majority of replies came from personnel sections, or from those with specific responsibility for graduate recruitment. Even where the names of line managers, or operational section heads were obtained, few responses were received. For example in one company only 2 replies were received to 64 copies of the document circulated to named staff.

3.2.4 Responses

The majority of the 75 responses received were very general in nature, there were very few detailed reponses to the specific learning outcomes. The following are some examples.

> *"The first point is a simple ambiguity where the questionnaire asks what one 'expects'. There is a wide gap between what one expects and what one would like in most cases. I expect many graduates to be isolated from the real world of economic enterprise, naïve but arrogant. None of these of course can be described as desirable qualities."*
>
> *"The authors admit that they have based it on academics' thoughts on desired learning outcomes. Perhaps that should have approached it rather from the employer's perspective, whereby the learning outcomes might have been usefully expanded to encompass more generic behaviours which are desirable within the business environment as opposed to that of academia."*

Some also misunderstood the projects intention to reflect the full range of outcomes of degree courses, and the values and outcomes of the different players.

> *"I am certain that it would be reasonable to expect a graduate of English, to defamiliarise conventions, shared codes, meanings and values. Why that should interest us as employers is unclear, and is indicative of this study's academic origins."*

The consultation with employers amply confirmed the fact that most of the employers responding were not looking for subject specialist knowledge.

> *"As recruiters of graduates for 70 years I believe we are seeking two things in a graduate. Firstly, but only in some instances, specific skills and knowledge related to, for example, science and engineering. These learning outcomes would be too detailed and too dynamic to be specified. Secondly a package of personal skills and attitudes including, questioning, listening, analysing, thinking creatively, influencing, persuading, enthusing and potentially leading, we would seek these in graduates of any discipline."*

Even those who did stress subject knowledge also stressed the broader generic qualitites.

> *"Except in the case of arts/social science graduates the first thing we are looking for is a considerable amount of detailed technical and professional knowledge about the specific subject they have studied.....this needs to be combined with the ability to harness this knowledge of facts and principles and systems to the solution of real problems.*
>
> *The second quality we are looking for is the capacity to assimilate substantial amounts of information, ideas, etc,*

synthesise these and apply this knowledge to the resolution of practical problems.

The third quality we look for is a capacity to work on the graduates own, without detailed supervision, to be a self starter.

The fourth quality is a capacity to fit in and work as an effective member of a team. however we would also like qualities of leadership.......

The fifth quality is communication skill.....

Finally we would like to add commercial awareness which enables graduates to understand the realities of business problems and the relationship of specific tasks to overall economic objectives. The last is comparatively rare among engineering or social science/arts graduates. Generally speaking those who have developed it have not done so through their time at university or polytechnic. Business studies students are often aware of this side of life, unfortunately they are usually technologically illiterate so that it is hard to employ them in key roles in an engineering based industry.

I am interested in your social science outcomes since these are our "graduates most likely to fail" category, they have excellent presentation skills, but generally do not stick to fact and have a "head in clouds" attitude. "

3.2.5 General Learning Outcomes

Several employers made suggestions about a general graduate list of outcomes. These included:

- ***ability to communicate with people at all levels***
- ***numerate***
- ***ability to plan and organise***
- ***flexible***
- ***show common sense***
- ***sociable***
- ***self motivated***
- ***enthusiastic***
- ***committed***

work as a member of a team

work on several tasks at once

supervise and motivate others

political and cultural sensitivity

ability to develop holistic and visionary strategies.

There were also suggestions that this list needed to be "much shorter", and contain

> *"Some justification for both students and employers as why these outcomes are relevant. Some of them are too specific and academic and not commutable to other situations and as marketable skills."*

3.2.6 Comments from Design employers

The circulation of consultative materials to graduate employers had concentrated on large companies which recruited significant numbers of graduates. Design graduates were, however, more likely to find employment with small companies or to be self employed. A separate circulation of the materials to design employers was therefore undertaken, and 36 replies were received. There was a high degree of consensus about the key outcomes which they sought in graduates, with more than 30 of the respondents endorsing 8 of the statements:

listen and observe

be able to explain, justify and present design solutions

to influence others, eg to sell one's own ideas and designs

understand clients' problems and issues, and to help clients to understand problems and issues

to accept and learn from failure

gather and select appropriate information, synthesise information from different subject areas, and to understand information and relate it to the design opportunity

continually add to their existing knowledge

identify the major issues or problems in any design opportunity

Very few of the identified outcomes were not thought relevant, and only 7 of the 36 respondents identified any in this category.

The written comments were overall very positive.

> *"I found all of your questions basically deserved a positive reaction - all the points made on the questionnaire are basically the right ones."*

However, there was a notable concern to stress the creative dimension of the study of design, and the less instrumental dimensions of degree level work:

> *"... what your questionnaire ignores on the whole is the importance of encouraging students to investigate and celebrate through their work personal ideas.... Tools, techniques, applications etc. etc. can only be regarded as the "craft" required to enable the "art" to ... be realised....I've seen far too many students wasting their time and potential by producing work that is expected of them rather than work that they want to do. ... Students should be encouraged to experiment, ... only through experiment and/or failure will students actually acquire the mental ability to recognise the potential new idea."*

> *"I'm afraid I found the questionnaire rather dry and full of "art school speak". I think the major reasons that many people seek to work in design and the arts are those of love, excitement and enjoyment. Not to "select appropriate information". ....If I .. employ a graduate I would be happier if they knew that Giollo was an Italian painter rather than a make of pencil."*

3.2.7 Overall findings on employer outcomes

The employer consultations suggest that more attention should be paid to a set of generic learning outcomes which apply to all graduates regardless of subject. Their emphasis on such outcomes matches the student expectations of their degree courses, and suggests that students are conscious of some of the requirements of the labour market.

The lack of detailed comment on the subject specific learning outcomes was disappointing since these outcomes included many which are common to several different subjects, as well as outcomes which were thought to have a wider relevance to the world of work.

The contrast betwen the design and the other employers is notable, and might merit further examination to explore how far the difference relates to the size of organisation or the nature of the subject, and if the latter predominates, how far these are characteristics shared by other subject areas in the arts and beyond.

3.3 Conclusions: students and employers

All three groups of people involved in the project provided views on learning outcomes but, since the project concentrated on work with academic staff, it is not surprising that this yielded the most detailed information.

Consultation with employers was on a limited scale and exploratory. It did not seek to produce systematic statistical data. It sought comment on the idea of describing the degree in terms of outcomes, as well as on the specific content. It would be naïve to expect that employers would describe a single and easily assimilable set of outcomes, and in the event the range of responses was not unexpected. Overall it suggests that employers judge the employability of graduates through a small number of generic skills, and that, with the exception of the very specific skills sought in some roles (science and engineering) these were common to most employers. The responses supported the learning outcome approach but, for employers, further work on the definition of broad generic graduate outcomes may be more valuable than the subject specific or vocational ones.

The student workshops showed a similar trend. Students welcomed the opportunity to discuss the outcomes of their courses, but tended to stress the personal development, social and vocational outcomes.

Chapter 4

Assessing Learning Outcomes

This chapter reviews the findings of the project on the assessment of learning outcomes. It draws on examples of assessment methods used and developed during the project.

4.1 Introduction

The inclusion of the assessment of learning outcomes in the project design was intended simply to provide some illustrative examples of how assessment criteria could be developed. In the event however, assessment proved to be a much more important issue. There were several reasons for this:

- the work required the groups to focus on the assessment of the outcomes they had described, this required both a hard look at existing practice and the development of new approaches to assessment. The validity of assessment (that is the extent to which the method(s) used actually measured what the staff were looking for) therefore became a primary concern, whereas it was evident that previously the staff had been more concerned about the reliability (the extent to which the methods they used were consistent and reproducible).
- many staff were concerned about the methods they were using to assess their students and about the difficulties they faced with increased student numbers. Some of the traditional approaches to assessment were impractical with large student numbers, and some staff faced an almost impossible burden of marking,
- there was general concern about, and interest in, developing new approaches to assessment but little expertise and experience,
- there was confusion about recent developments, particularly about the assessment of competence and profiling and records of achievement, and the implications these had for grading and the classification of degrees.

The work on assessment was on a relatively small scale and this chapter therefore presents a brief review of the methods used.

The original UDACE model for the development of learning outcomes[13] had described three approaches to assessment: criterion referenced, norm referenced and personally referenced: and had envisaged that all three approaches would have a place in the assessment of learning outcomes but would be of differing degrees of relevance to teachers, learners and employers. [14]

4.1.1 Starting points

The work began with a two day residential workshop to review the current assessment practice of the participating academic staff and to plan the project work. Individuals were asked to describe what they assessed and how, and at what stage assessment was carried out in their courses. This was a helpful starting point. It provided an opportunity to unravel the complexity of assessment practices in some courses, and to debate and compare different approaches. In a subsequent evaluation of the assessment work many participants described it as "one of the most useful things we have done on this project", and "the first time in my higher education career that I have ever had to justify what I was trying to do in assessment".

Each of the subject based groups of staff was then asked to look at ways of assessing the learning outcomes they had described and to focus on one, or a small number of outcomes and trial forms of assessment with their students. Most groups opted to assess learning outcomes which they felt were not assessed currently or were not assessed well. They were provided with a wide range of examples and ideas and with access to expert advice.

Most of the discussion in the groups focused on the development of assessment criteria for the outcomes, notably on how these were to be decided and who was to be involved in that decision.

The principle of using assessment formatively to provide feedback to students predominated in the plans for two reasons. Firstly this seemed neccessary if some of the more complex and personal outcomes were to be addressed, and secondly because of a very proper caution amongst staff about introducing radical changes of method without wider staff and student support, as well as support from external examiners.

Each group undertook pilot assessment work. The following section outlines the work of three groups, in Design, English and Social Science.

4.2 Assessment work in Design

The Design group had a particular concern, to shift the emphasis in assessment from the product to the student. Their concern was that learning undertaken while producing the product is probably greater than the learning which can be observed in the product which is a major focus of assessment in Design education. The group was interested in using learning outcomes to develop better forms of feedback to students, and opted to use students themselves both to develop and agree the criteria for assessment and to assess one another in a peer group session.

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[13] *Understanding Learning Outcomes* UDACE (1989)

[14] Note 7 describes these three approaches in more detail

Teaching and assessment in Design does differ quite markedly from other courses, since the student's work is constantly on display and therefore open to comment and criticism from staff and students at all stages. In other subjects by contrast, a student may have several private attempts at a piece of work before s/he is required to present it for assessment, and then it may be assessed and commented on by a single member of staff. This could be the basis of an important distinctive learning outcome in Design, distinguishing it from other subjects where closed reflective processes are more common.

18 second year graphic design students were asked to present a series of designs for a magazine relaunch. They began by using some of the general learning outcomes developed during the project, for example:

> ***Analysis - demonstrate the ability to analyse information and images in order to communicate their meaning precisely, clearly and sensitively.***

These were discussed in small groups, with staff playing a facilitative role, and specific criteria were agreed by the group. Each student was then required to present her/his designs and these were discussed using the agreed criteria by small groups of students. Each student was provided with written feedback from the rest of the group.

The approach proved to be popular and successful, probably because it was well presented to the students, they saw it as beneficial to them and they could play a direct role in agreeing the criteria. The staff member concerned found that it provided clearer evidence of the learning outcomes than he was accustomed to obtain from such exercises.

A similar approach was used with first year students in another Design course where the learning outcomes were presented as assessment criteria for project work. Again the staff felt that the exercise produced useful evidence of the learning outcomes, but the students resented the loss of a normative assessment grade provided by staff. For the students this respresented an abrupt change from a familiar form of assessment to an unfamiliar one. They did not have an opportunity to discuss the criteria which they felt were being imposed from the outside. They were clearly used to gauging their progress against one another and felt that the staff were there to provide assessment: "it's their job not ours " was a familiar comment. It appeared that discussion of the criteria for assessment was an important prerequisite for student involvement.

4.3 Assessment work in English

The English group developed an ambitious series of plans to assess 'critical thinking' which they had described as an "overarching learning outcome". They chose to do this because they felt that the term 'critical thinking' was ambiguous and often not understood in the same way by staff and students; and that current methods to assess critical thinking, tended to focus on particular aspects of it, particularly interpretation and analysis, but neglected the need to develop an independent perspective, or to identify unstated propositions or limitations in ideas.

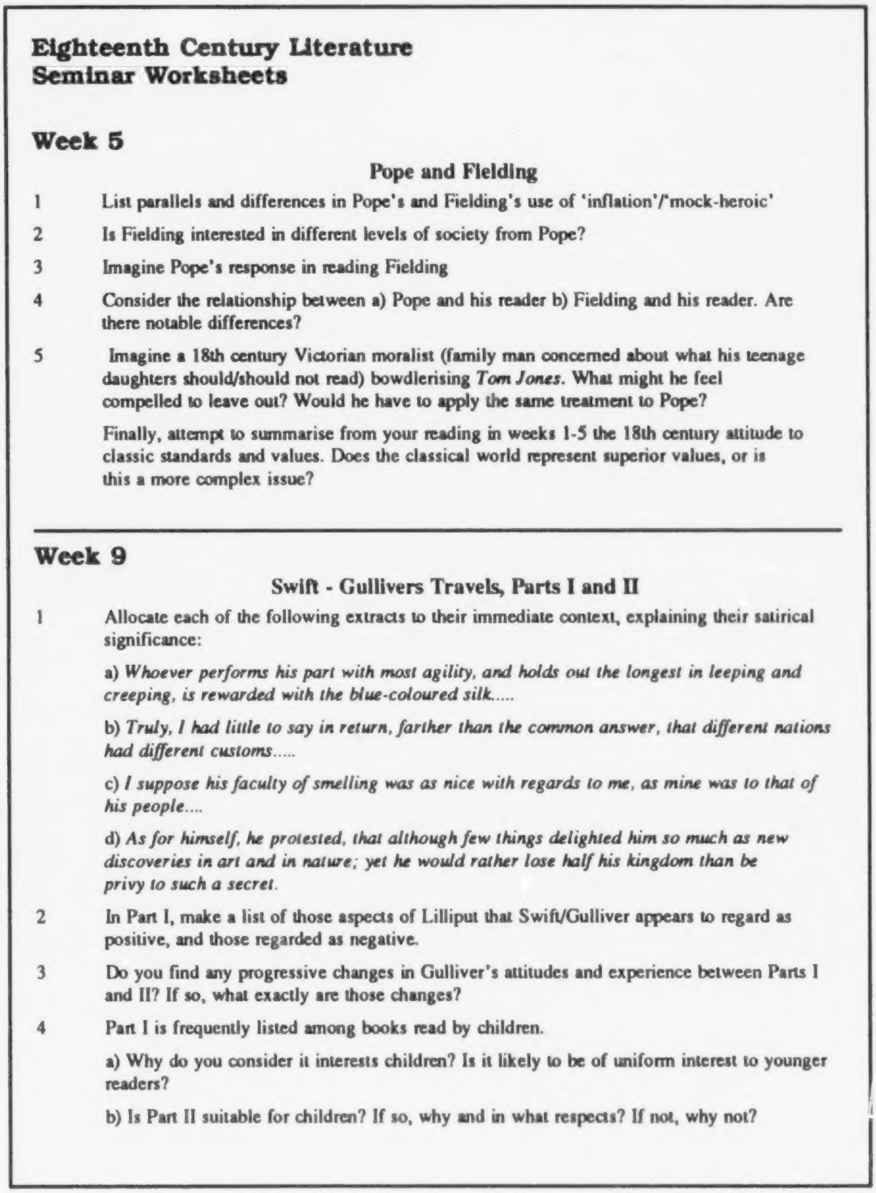
In one institution, the learning outcomes were used to support a seminar programme, (which was accompanied by a programme of lectures), for two groups (16 in total) of students studying Eighteenth Century English Literature. Students were provided with two sets of documents:

> **a seminar worksheet**, describing the work the student was required to complete in preparation for the following weeks seminar. These were 'text based', they listed the reading the student was required to complete (this was normal practice prior to the project) and detailed several of the learning outcomes (this was novel). The same learning outcomes did not appear in each seminar, although critical thinking was clearly evident in most of them.
>
> **a seminar 'attachment sheet'**, with three headings, critical thinking, research and information gathering, and creative thinking. Each was explained further with a short descriptive sentence. Students were asked to fill in against each heading, their comments on their own preparation for the seminar, these were briefly discussed at the start of each class. At the end of the seminar they were asked to fill in comments on the seminar outcomes under the same headings.

The staff member kept a record of all the student sheets and carried out an evaluation with students at the end of the series of seminars.

The exercise was judged to be successful by both the member of staff and the students. The lecturer and the students made the following comments;

- *"the course as a whole seemed "more sharply defined",*
- *"student planning for the seminars was more directed and more precise,"*
- *"students returned to the topics more frequently during the week preceding the seminar,"*
- *"differences in student responses became more marked as the seminars progressed, (it emphasised or 'stretched out' differences in student performance),"*
- *"the seminar 'had greater authority', and was taken more seriously by students, even though the outcomes did not contribute directly (arithmetically) to the degree,"*
- *"students felt they were 'forced' into being more self reflective and self critical (in an academic sense), this was a novel experience for many of them,"*
- *"there was an increase in the awareness of the seminar as a group activity, rather then something which a collection of individuals came together to do."*
- *"keeping a record of seminar preparation had a direct benefit on learning."*



Eighteenth Century Literature
Seminar Worksheets

Week 5

Pope and Fielding

1 List parallels and differences in Pope's and Fielding's use of 'inflation'/'mock-heroic'

2 Is Fielding interested in different levels of society from Pope?

3 Imagine Pope's response in reading Fielding

4 Consider the relationship between a) Pope and his reader b) Fielding and his reader. Are there notable differences?

5 Imagine a 18th century Victorian moralist (family man concerned about what his teenage daughters should/should not read) bowdlerising *Tom Jones*. What might he feel compelled to leave out? Would he have to apply the same treatment to Pope?

Finally, attempt to summarise from your reading in weeks 1-5 the 18th century attitude to classic standards and values. Does the classical world represent superior values, or is this a more complex issue?

Week 9

Swift - Gullivers Travels, Parts I and II

1 Allocate each of the following extracts to their immediate context, explaining their satirical significance:

a) *Whoever performs his part with most agility, and holds out the longest in leeping and creeping, is rewarded with the blue-coloured silk.....*

b) *Truly, I had little to say in return, farther than the common answer, that different nations had different customs.....*

c) *I suppose his faculty of smelling was as nice with regards to me, as mine was to that of his people....*

d) *As for himself, he protested, that although few things delighted him so much as new discoveries in art and in nature; yet he would rather lose half his kingdom than be privy to such a secret.*

2 In Part I, make a list of those aspects of Lilliput that Swift/Gulliver appears to regard as positive, and those regarded as negative.

3 Do you find any progressive changes in Gulliver's attitudes and experience between Parts I and II? If so, what exactly are those changes?

4 Part I is frequently listed among books read by children.

a) Why do you consider it interests children? Is it likely to be of uniform interest to younger readers?

b) Is Part II suitable for children? If so, why and in what respects? If not, why not?

Figure 4.1 - English: an Approach to Assessment

Seminar attachment sheet

Term: **Student:**
Week:

Worksheet Items	Comments on Seminar Preparation	Comments on Seminar Outcomes
1 Research/Information Gathering (How much/how well prepared? Use of library resources? Task sufficiently well specified? Difficulties encountered?)		
2 Critical thinking (How much analysis/synthesis involved? How much interpretation/discussion required? Number/relevance of examples cited?)		
3 Creative thinking (Usefulness/relevance? Limitations? Difficulties? Insight?)		

Seminar Summary

	outstanding	good	satisfactory, with some inadequacies	inadequate
Usefulness				
Relevance				
Contribution (of self)				
Contribution (of others)				

Again the exercise demonstrated that stating the learning outcomes provided better evidence that students were (or were not) achieving them. The benefits to the learning process were also very clear, the motivational advantages of this approach are described by Eraut (1989) writing on the advantages of sequenced objectives. "*From the student's point of view, what probably matters most is an objective's position on the immediacy-remoteness continuum.... Many objectives can appear to be both temporally ... and conceptually ...remote. Perceiving links between their immediate objectives and possible ultimate goals can be crucial for some students' motivation.*"

4.4 Assessment work in Social Science

The Social Science group chose to concentrate their attention on three learning outcomes which they felt were not currently assessed.

open-mindedness in the face of unwelcome ideas and evidence.

the ability to suspend personal judgments until appropriate evidence had been gathered, analysed and evaluated.

competence at taking the role of the other, that is the ability to represent the views of another person without personal bias.

The group felt that these were implicit in the teaching of many social science courses, but that students were probably not so clearly aware of what they meant in practice.

One of the pilots was undertaken with a group of 68 second year students from a module on "Ethics and Social Sciences". The assessment of these particular learning outcomes required the design of a specific learning activity (a series of seminars and debates) to provide opportunities to understand, develop and assess these learning outcomes. The whole process had five stages:

1. Students were given a list of seminar topics (they were also advised that they could suggest their own if they wished), and details of the assignment they had to complete. This was the only summatively assessed component of the course and contributed to the degree classification.
   They were also given a list of learning outcomes which they were expected to demonstrate (these included the three above) and which would form criteria for assessment of the assignment.

2. The first seminar was used to explain and discuss the list of learning outcomes (developed in the project) provided by the tutor, this included an explanation of the differences between norm and criterion referenced assessment and the purposes of the UDACE project. Students were asked, in small groups, to develop criteria which would enable an assessor to judge whether or not a student had demonstrated the learning outcomes.

3. The second seminar was used to stage a series of role plays which debated a range of ethical problems (the actual example used was of toxic chemical disposal, and the role plays focused on how a range of people reached decisions, the final stage being a

prosecution for reckless endangerment). Students took part in the role plays and acted as observers, they used the learning outcomes and criteria developed previously to inform their preparation, performance and observations.

4. The third seminar was used to stage a debate using a case study (this time of a bank fraud), students were divided into groups and were asked to take either a Kantian or a Machiavellian position in the debate.

5. The last stage was the writing of the assignment, students were required to self assess their assignments against the learning outcomes and criteria discussed in the first seminar. The tutor used the same criteria for assessment and his comments were made on the same self assessment form completed by the students.

Comments from both staff and students were used in evaluating the exercise. The overall findings indicated that, despite the discussions, some students were still unclear about some of the learning outcomes and assessment criteria: and this was reflected in the final assignments as well as in student comments.

This suggested that although the member of staff concerned thought the outcome statements were clear, his students were able to reinterpret and misinterpret them in various ways. For example:

- students saw some of the outcomes as "all or nothing" statements, some of them felt that the outcomes were too difficult and complex and that they (the students) were some way from achieving them (cf Eraut *op cit*).
- some students suggested that the learning outcomes were attempts to change, rather than develop, their values and opinions whereas the tutor felt that they were intended to describe how students examined and understood values, and how they developed ways of reviewing and testing them through a process of critical scrutiny of evidence.
- the tutor also commented that the ability of students to evaluate their own work was a major weakness, and that this probably needed to be a learning outcome in its own right.[15]
- students suggested that it was confusing for them use a learning outcomes approach in one part of the course. The tutor commented that the ideas needed to be reinforced, otherwise the benefits were dissipated, since students do "what is required of them" on the learning outcomes parts of the course and resume "normal" working elsewhere. "The whole course team needs to be committed to the approach and this implies the involvement of external examiners as well as the institutional quality assurance procedures".

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[15] These issues are discussed at length by Schön (1987)

4.5 Conclusions: Assessment

4.5.1 The initial workshop

The workshop established several points very clearly:

- there was little evidence of the development of an assessment strategy for a course or a programme of study. Individual staff often had little idea about what or how their colleagues were assessing

- most approaches to assessment were very conservative: some staff had never thought of assessment in terms of anything but an essay or an unseen examination, and most of the assessment methods being used relied solely on tutor assessment,

- most staff placed heavy emphasis on reliability and grading, although several had evidence of variability in the assessment of written work (such evidence of course abounds in the literature). The ways of grading and marking work and the distinctions between grades and classes, appeared to occupy a disproportionate amount of time and effort,

- assessment systems depended on sampling approaches whose validity seemed questionable, if the purpose is to establish that the candidate has demonstrated achievement of a specified range of outcomes. An outcome led approach raises questions about assessment strategies based on achieving a limited percentage of marks on an examination which allows the candidate to select a few questions from a long list.

4.5.2 The development of plans

The work on assessment was disappointing in that it produced fewer illustrative examples of assessment practice than anticipated. The plans developed proved to be over ambitious in practice since several of the participating institutions failed to complete or report on their work. There appeared to be several reasons for this:

- shortage of time, some staff found it impossible to make time to introduce their plans,

- difficulties in changing assessment style in mid course, without support from other staff.

- lack of institutional support and co-operation from colleagues.

These findings are important in considering how changes of this kind might actually be effected.

4.5.3 Assessment and the learning outcome statements

The most important finding of the work was that the requirement to assess the learning outcomes forced the subject groups to clarify their learning outcome statements, and made the groups realise the importance of accuracy and negotiation when defining learning outcomes.

This led some staff to feel that the learning outcomes approach was not as instrumental as they had feared, since it required staff and students to talk about what they were trying to do, but still permitted students some freedom of expression, and did not discourage other unplanned learning outcomes.

The work also led some of the groups to think that there were learning outcomes which they had not described, but which should be included. The social science group for example, decided that they needed further learning outcome in self-reflection and self assessment.

Overall this suggests that the description and assessment of learning outcomes need to proceed hand in hand, and that the requirement to be able to assess what is being described is a useful discipline.

4.5.4 Assessment criteria

The evidence of diversity suggests that the description of learning outcomes should not be based on a set of nationally imposed performance criteria, as is the case with learning outcomes for NVQs. The group approaches to setting performance criteria for assessment were interesting, the most successful involving discussion and agreement of criteria with students, rather than their imposition. This does not imply that students should be given a 'free hand' to decide criteria, but the discussions surrounding the setting of criteria plainly took place in a setting where students were expected to, and responded to the opportunity to, discuss and understand criteria for themselves.

Discussion with some of the groups suggested that the ability of students to decide their own assessment criteria was in fact a learning outcome. This linked back to some of the earlier debates about the culture of disciplines, and the idea that a higher education course was a means of admission to that culture. The principle was not so much that students should be able to assess themselves against simple criteria, as that they should have learned some of the "syntax and concepts" (Schwab 1962) of their subjects/disciplines and internalising the discipline based value systems against which they were being assessed.

For some groups there remained some 'learning gains', for example personal growth and development of the student, which academic staff felt were either impossible to describe adequately, or impossible to specify in advance. This was a source of considerable concern at the outset of the project, but the discussion and clarification which surrounded the assessment of learning outcomes, in particular the encouragement of unplanned outcomes, helped to allay some of them.

The findings suggest that one of the major differences between learning outcomes in NVQs, and learning outcomes in higher education, is the way in which performance criteria are arrived at. NVQs are in a sense a 'licence to practice' and it is appropriate that the criteria for judgment should be nationally decided by the bodies concerned, and presented in some detail. It is not clear that higher education needs to work to nationally decided and pre-defined criteria in all areas, although there are clearly cases where degrees lead to professional qualifications and external standards will need to be used. The ability to develop and use one's own criteria may be an important defining characteristic of higher education.

4.5.5 Grading

Several of the groups which chose to discuss and agree criteria with their students were subsequently faced with the question of how to grade the work. There was some discussion of the necessity of grading since the agreement of criteria was essentially a statement of what was required. If the students met the criteria, was it really necessary to grade them? Grading was however standard practice, and was the basis of the classification of degrees, its abandonment posed questions of a serious and fundamental nature, and the project did not provide sufficient evidence to propose a change of this nature. Nevertheless, the grading issue is a fundamental one in the reshaping of higher education, and will need to be addressed in any further development of an outcome based approach.

4.5.6 Validity and Reliability

The validity and reliability of assessment were repeatedly discussed in connection with this work, although the difference between the two was often not well understood. There was general concern with the reliability of the forms of assessment used, this mainly centred on marker reliability and second marking, but it was not until the groups came to consider how they were going to assess the learning outcomes they had described, that they really thought seriously about whether the methods they were using assessed the outcomes they were looking for.

The requirement to find ways of assessing the learning outcome statements prompted a more serious evaluation of the validity of the proposed assessment methods than was expected. This in itself may make work on learning outcomes valuable to many institutions.

The discussion prompted some groups to ask what their existing approaches to assessment actually measured. It was not clear that written examinations assessed some of the learning outcomes, and it was also not clear that coursework essays were any better at assessing some of them. The current system of grading, and using a 40% pass mark also permitted some students to proceed/pass without requiring them to demonstrate that they had achieved all the outcomes. Current practice might allow a students failure in one area of a course (and hence presumably in the learning outcomes associated with it), to be compensated for by good performance in another. For some learning outcomes this was probably not contentious, however it did raise a serious question about whether some of the learning outcomes should be essential requirements, which students should be required to demonstrate before they passed.

The findings strengthened the view that there were learning outcomes which were core, or essential in particular subjects, and that their definition had important implications for assessment practice.

4.5.7 Over-assessment

The groups had expressed concern that the description of learning outcomes would result in an increase in assessment, with the danger that students would be 'over-assessed'. This was also suggested in some of the responses to the consultative document. Actual experience suggested that the nature of assessment in higher education was complex, and that it was impossible to assess one learning outcome without also providing evidence of others.

This made it clear that learning outcomes at this level need not be assessed one by one: a single assessment process might provide evidence of several different learning outcomes. It might therefore be helpful both to provide a student with several opportunities to demonstrate a particular learning outcome, and even to require that they were able to demonstrate it more than once, in different ways.

It also suggested that once staff were alerted to the idea of looking for learning outcomes, then they might discover that a student had demonstrated other learning outcomes, not described and anticipated. This supported the view that the concept of learning outcomes was not as instrumental as had been feared.

4.5.8 Benefits for staff

The work on assessment was thought by those involved to be a useful experiential learning exercise which provided valuable information on writing and implementing learning outcomes, as well as on assessing them. The exercise was simple to organise and to implement, and cross institutional work of this kind may be a model which could be used elsewhere. Some of the findings and conclusions reached are:

- the project allowed staff the opportunity to stand back and consider what they were assessing and why? This provided a novel and much welcomed opportunity to question existing practice and received wisdom in assessment.
- the work persuaded several tutors to become "classroom researchers" (in the sense described by Patricia Cross (1988) and to apply the critical and analytical skills which they commonly reserved for the study of their subjects, to the processes of teaching, learning and assessment. One of the respondents to the consultation document commented, " I have however come to recognize that academics tend to abandon their usual standards of argument and evidence entirely when discussing matters to do with teaching and learning".

The need for staff development in assessment is evident, but the experience of this project suggests that such development can be effectively and economically achieved through subject networks and 'classroom research' rather then through training programmes.

4.5.9 Learning outcomes, assessment and teaching quality

The work on assessment prompted some groups to examine what and how they taught their students, and the extent to which the methods of teaching and learning they used helped students to achieve the outcomes they had described. There was an acknowledged tendency to assume that lectures, tutorials and seminars were learning environments, and that acquiring knowledge through these environments naturally led to acquiring knowledge processing skills. It was acknowledged that many of these skills were held to be implicit by staff and that some students never really understood what was required of them. It was clear that describing these implicit expectations as learning outcomes would be an advantage for students, but that describing them was only part of the answer, students needed to be provided with an opportunity to learn and demonstrate them as well. There was some doubt as to whether many courses did this well, and this posed a problem for staff and students, since the failure of a student to demonstrate a particular learning outcome might be a failure of the course to provide an opportunity to develop it, rather than a failure of the student to learn it.

This is an interesting finding since it provides an example of staff using learning outcomes as a means of examining the quality of their courses, rather than their students. Existing approaches to course validation and review use similar questions, but it may be that learning outcome statements together with details of their assessment could provide information which helpfully contributes to such processes.

4.5.10 Implementation: work with students

The work shows that it was not easy to implement a learning outcomes approach on one part of a course in isolation. It was only possible to do some of this work because students were prepared to co-operate. The fact that all the project participants did not complete their work on assessment suggests that co-operation may have been a difficulty in some institutions.

The project did cause some problems for students, some had difficulty in adjusting from one form of assessment to another and others resented the requirement to use and discuss criteria for assessment, preferring a familiar system of grading administered by the tutor.

Overall it was clear that a learning outcomes approach could not be developed piecemeal, it required the collaboration of the whole course team, and this implied also the involvement of external examiners and course quality mechanisms.

The project predictably raised many questions about embedding innovation and the management of change in higher education. It underlined the need to support innovation by individuals, but to avoid the 'lone hero/ine syndrome' encountered so frequently. Support is probably best provided through existing course structures and quality assurance procedures.

The development of a learning outcomes approach would clearly have consequences for current approaches to assessment, a number of specific issues can be identified:

- if learning outcomes were to be a clear and public statement of what a student was required to be able to do, then there would have to be clear decision on what constituted satisfactory achievement for each learning outcome.
- there would also have to be a clear decision on whether a student should be required to achieve a "satisfactory performance in each outcome, or in some outcomes, or should there be a predetermined minimum number of outcomes (drawn from each type?) which a student must complete satisfactorily to proceed, or to achieve an award.
- there would need to be clear guidelines on whether it was possible or desirable to grade all assessments, would it be more practical to grade the assessment of some learning outcomes, have others as pass and fail?

Chapter 5

Accreditation: major issues

The work on accreditation raised three major issues of principle. These concerned the notions of level, credit value, and coherence, and are discussed below. Chapter 6 then offers examples of approaches adopted by three of the subject groups.

5.1 Introduction

An investigation of the relationship between learning outcomes and credits was a major objective of the project. The principles of credit accumulation were well established in higher education through the CNAA CAT (credit accumulation and transfer) scheme. Standards within the scheme (at undergraduate level) are determined with reference to the principal award, the Honours degree, and the unit of credit is not defined.

The major disadvantage of this approach is that it assumes that all degrees, irrespective of subject or awarding institution, are of equal value. In practice the unit of credit acts, overtly or covertly, as the standard and is measured in fractions of the time it takes to complete a degree course, rather than as a set of achievements or standards. This approach has further implications for the accreditation of any learning which takes place outside a course structure, all of which must be measured against the taught course benchmark. An outcome led approach might help to clarify what credit was being awarded for, and provide a more robust basis for credit transfer.

This is particularly important in view of developing interest in the creation of some form of national CAT framework, embracing all post-school learning, and enabling progression from basic education to postgraduate work. This would call for clearer relationships between the three major credit accumulation and transfer systems (National Vocational Qualifications, CNAA CAT, and the developing National Open College Network[16]). Explicit outcomes seemed likely to provide a better basis for such a development than the use of learning time, when notions of time are very variable across sectors and institutions.

The project therefore set out to investigate approaches to determining credit value based on learning outcomes, rather than actual or notional time.

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[16] These three schemes are outlined in Note 5

5.1.1 Credits and delivery systems

It is important to stress the distinction between credits, which are measures of learning and achievement, and units or modules, which are delivery systems for courses. Many degree courses are offered to students through a system of modules and units, which are simply blocks of teaching. A unit/module might for example, occupy one tenth of student's time in an academic year, and a student might need to complete ten units in order to fulfil the requirements at that level.

For many full time students on conventional courses the notion of credit is irrelevant, since the programme is based on the completion of set number of taught blocks. However a student (full or part time) might transfer to another institution, or choose to take part of his/her course at a second institution. Here there might be a different delivery system perhaps with much larger units occupying one quarter of a student's year. The common credit structure (120 credits at each of three levels) provides a useful framework against which a variety of delivery systems can be compared. A student might also receive credit for prior learning or for work based learning, and here again the credit structure provides a useful and simple means of calculating the relative worth of the learning, in comparison with a degree.

5.1.2 Starting points

The guiding principle of CATS is that it provides the means of accrediting learning, wherever the learning took place, provided that it can be assessed. Each of the five subject groups was asked to develop ways of determining a credit value for their learning outcomes using the CNAA CAT scheme.

The work on credits and learning outcomes was the most complicated, and in some senses the least successful area of work. Most of the problems stemmed from a lack of understanding of the CAT credit scheme, and its implications for the accreditation of learning. Most of the group members had little experience of CNAA CATS, or of credit accumulation and transfer generally, and it was therefore necessary to provide a workshop and materials for participating staff. This was successful in transmitting the basic information but as later work showed, the groups really needed more in depth experience.

Three major issues were raised by the groups in the subsequent work, these are questions of level, credit value and coherence, and are discussed below.

5.2 Major Issues - Levels

5.2.1 Course diversity

It was agreed that, initially, subject groups would not examine levels within degree programmes, to avoid discussion of the outcomes of the degree becoming confused with debates about particular course structures. The wisdom of this decision became evident as the variety of course structures, even within the same subject area, was identified, with material included in the first year of some courses occurring in the second or final year of others. This reflected the very different ethos of some courses and different approaches to course design. The following examples illustrate the degree of diversity:

> *Courses where the first year was devoted to fundamental principles or areas of the subject, which were then built on in the second year, with the third year covering applications of this information in different settings.*
>
> *Courses which began with a broad consideration of applications and what one member called "real world problems", and then developed specific knowledge relating to these in the remaining years of the course.*
>
> *Courses with a common second and third year, offering the same options to students from both years.*
>
> *Courses with a very structured first two years and a concentration on individual project work in the final year.*
>
> *Courses were made up of units where the level was not defined, a student could therefore take units at any stage in his/her programme.*

At first it was felt levels might be used to describe stages in a course, rather than as absolute descriptions of levels of attainment. The CNAA CATS Regulations (CNAA 1991) were found confusing on this issue. They first propose that levels relate to the standard of work, and not necessarily to the year, or stage of the course at which the work (module, unit) is normally encountered. They then go on to relate standards to the year of the course in which the work occurs. On this basis learning at level 2 for one student could be counted at level 3 for another. This is helpful in the construction of programmes of study for CAT students since it allows greater flexibility. A student studying at Level 3, who wished to broaden her programme of study could therefore use an agreed proportion of her programme to include a modern language, or finance units taken from Level 1 or 2 of other courses. In this case it is the **development of the student**, not the unit itself, which determines the level. This further implies that levels are stages of progression, intended to provide a basis for the construction of a coherent course for an individual student.

5.2.2 Two views of level

Overall there were two broad approaches to the question of level, which may coexist within the same degree programme. The first was based on the notion of progression or prerequisites, and the Social Science and the Design groups both produced models based on this principle. Other groups suggested that the same learning outcome statements could appear at several levels, usually by making the criteria for assessment more demanding at each. The second approach rested on the notion of a continuing developmental process through the degree programme and sought a central developmental strand against which to describe this progression. The clearest version of this was offered by one institution in response to the consultative document.

Incremental Progression

On this view learning outcomes statements should describe what will be achieved at the point of graduation, but it might be necessary to demonstrate some of these at an earlier stage, depending on the construction of the course. Some learning outcomes might therefore act as requirements for progression to higher levels within the programme, and some could not be demonstrated at earlier stages. Table 5.1 shows how an example of how the Social Science learning outcomes were allocated to an existing course structure. The first row in the table lists the learning outcomes which the student must have satisfactorily demonstrated at the start of the second year of the course.

Social Science: Learning Outcomes Allocated by course & year: Year II

LOs definitively achieved by start of year 2		LO11, 13a, 13b, 13c, 16, 22	
General LOs across all year 2 courses		LO1, 7, 9, 10, 14, 17, 18, 19, 20, 24, 25, 26	
Sociology of Culture	20	LO2, 3, 4	
Theories of Modem Society	20	LO2, 3, 4	
Methods of Social Inquiry II	20	LO5, 6, 8, 12, 13d, 13e, 21	
Year II Options (3 to be chosen)			
Inequalities and the State	20	LO3	
Inequalitites: Reproduction or Change?	20	LO2, 3, 5, 12, 15	
Crime, Deviance and Society	20	LO2, 3, 4, 5	
Systems of Justice	20	LO2, 3, 12	
Work, Employment and Society	20	LO2, 3, 26, 27	
IT and Society	20	LO3, 12, 13d, 13e	
Language II	20	LO13f	
Ethics and Social Philosophy	20	LO4, 12, 15, 21, 23, 27	Subtotal=120

Index of Learning Outcomes

LO1: Vocabulary
LO2: Socio-historical Development
LO3: Major Social Institutions
LO4: Theoretical Perspectives
LO5: Forms of Research/Validity of Results
LO6: Conceptual Frameworks for Research
LO7: Access, Sort, Interpret Information
LO8: Practical Research Experience
LO9: Contestability of Social Judgement
LO10: Argumentation
LO11: Suspension of Personal Bias
LO12: Ethics in Social Science
LO13: Communication Skills a - Literacy b - Note-taking c - Reportage d - Numeracy e - Computing f - Foreign Language
LO14: Self-direction
LO15: Self-knowledge
LO16: Deadlines and Pressure
LO17: Critical Attitude
LO18: Organisation
LO19: Synthesise and Report
LO20: Know teaching methods
LO21: Take role of the other
LO22: Reaction to Feedback
LO23: Ethical Conduct
LO24: Teamworking/Teamleading
LO25: Practical Appraisal of Group Dynamics
LO26: Reform and Design of Groups
LO27: Professional Intervention

Figure 5.1 - Social Science: Levels and Progression

Continuous Development

The alternative model also required that learning outcomes should be described at the graduate level but proposed that level should be defined, not in terms of prerequisites but on the notion of continuing personal development.

One option proposed suggested that the best basis for such criteria would be the increasing autonomy of the student. The early stages of a course were usually largely defined and delivered by the staff. Information was therefore prepared for the student and the course covered the basics or fundamentals of the subject. At higher levels the student was increasingly expected to retrieve, select and process information independently and to develop a wider range of learning and problem solving skills. At the final level the student was expected to think and learn independently, develop self motivation and demonstrate intellectual curiosity in developing and exploring novel ideas and solutions. In this case, the subject material might be identical in the first and third years of the degree course: what changed was the degree of sophistication with which the individual learner was processing this.

Figure 5.2 shows a model of levels based on learner autonomy, which was offered in the course of the project consultation by Falmouth School of Art and Design, where it is used as the basis for assessment in a degree in Graphic Information Design.

Falmouth School of Art and Design
Assessment Levels

Level 1

This is learning that students perceive is done to them by teachers, rather than something they do. Learning is memorising. The student has an active role in memorising, but the information being memorised is not transformed in any way.

Level 2

This is learning that is acquiring facts, skills of procedures which are to be used. What is learned is seen as needed in order to do things at a later date, but there is still no transformation of what is learnt by the learner.

Level 3

This is learning that makes sense. The student makes active attempts to abstract meaning in the process of learning.

Level 4

This is learning as understanding reality. Learning enables the student to perceive the world differently. The student sees her work in a world context and recognises its value.

Figure 5.2 - Falmouth: Levels and Autonomy

5.3 Major issues - credit rating

The second major issue concerned credit rating - allocating a credit value to an outcome or set of outcomes. This is the measure of 'volume' in a CAT scheme and is problematic in relation to outcomes, which are inevitably of different sizes. Even when clustered into units they are unlikely to be of equivalent value, as the NVQ system, with units of very different sizes demonstrates. The CNAA CAT scheme aims to provide maximum flexibility and to accommodate the structure, objectives and learning outcomes of many different degree programmes and learning at degree level. It is based on the notion of the Honours Degree, which is then divided into a number of smaller 'pieces'. The CNAA divides the degree into 360 equal parts ('credits'), although it suggests that 4 credits is the smallest useful unit for teaching or assessment[17].

The major weakness of the scheme is that it relies on the degree as a benchmark, assuming an equivalence between degrees from different institutions and between degrees in different subjects in the same institution.

The CNAA CAT scheme does not define what a credit represents other than by reference to a full degree, and a credit has value only in relationship to the whole (the degree). Intermediate awards, such as Certificate of Higher Education (120 credits) and Diploma of Higher Education (240 credits) are recognised as stages or milestones on the way to a degree, although like all higher education awards they are expected to represent a coherent body of learning, and not a random collection of credits. The definition and award of credit is a matter for the quality assurance procedures of the individual institution.

The working definition of a credit is achieved in two major ways which are described below.

5.3.1 Credits related to courses

The credit rating of any piece of learning is usually determined with reference to an existing degree course structure. For example, a modular degree course might require a student to complete 5 modules per term, and a total of fifteen modules per year. Using CAT credits, each module would carry 8 credit points and a student would accumulate 120 credits for successful completion of the fifteen modules.

An alternative approach, adopted for example, by Liverpool Polytechnic, begins by defining a credit in terms of time. The scheme there begins by defining a credit as "one hour of structured, directed learning activity undertaken by a student per week for a 30 week learning year" (i.e. including teaching, workshop and laboratory time and independent study time, without which enormous discrepancies appear between courses in different subjects). So a credit is defined as 30 "notional hours". It then defines "the minimum learning requirement for any student" as 900 hours per year: a student therefore accumulates 30 credits per year and 90 credits for an Honours degree. One Liverpool credit is equal to 4 CAT credits, the smallest unit recommended by the CNAA.

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[17] CNAA Handbook (1991).

5.3.2 Credits not related to courses

The previous options above use modular structures or notional time to create a benchmark, and courses, units and modules are therefore credit rated using time. Learning which is not acquired as a result of a course (for example prior learning, or work based learning) is usually compared to conventional courses, and learning times and course objectives matched, to obtain a credit rating.

APL, in-company learning and work-based learning can pose problems if credits are calculated using time. The comparison may be difficult because of the large mismatch between actual time and credit value. An individual may, for example, claim credits for experiential learning, through APL or a learning contract. The learning outcomes may be the same as those of the course, but since they have been gained experientially they may have taken much longer to acquire. On the other hand the same learning may be part of a training course run by a large employing organisation, where the same material may have been covered in a much shorter period of time than on a degree course.

More complex problems are posed, however, by learning which is not part of an existing course, and where no direct comparison of this kind can be made. Some prior learning falls into this category, and here estimates of level and credit number are made by careful examination of the assessment criteria, which give an indication of the level, and by looking at the learning in relation to the whole award. Here questions of balance, coherence and content are used to ask questions like, how much of the award does this learning represent?, is the learning at the same depth as that on existing degree courses?, is there sufficient breadth of learning in comparison with other degree courses?

The drawback of all these approaches is that they use the three year degree **course** as a benchmark, and do not define what the degree requires. As one employer correspondent said:

> *"Why are degrees three year courses? - is it because the government funds you for three years. I expect that if you were only funded for two years that some institutions would fairly quickly develop a two year course".*

Another suggestion was that degrees needed to take three years because they took into account a maturation factor for their traditional 18-21 year old clientele. Several people suggested that degrees could take two years if the age at entry was 21 not 18. Current work on development of accelerated degree programmes may address some of these questions.

5.4 Major issues: coherence

The third issue concerned coherence, it was clear from the CATS regulations, and indeed from the CNAA Principles that credit accumulation was not simply a matter of numbers. A student would not get a degree just by accumulating a random collection of 360 credits. An award must embody some notion of coherence and balance to be met in the learning which the credits represented. This requirement underpinned the differentiation between general and specific credits. The CNAA made clear that general credits were:

> *"a numerical value representing the credit points attached to qualifiable prior learning of an intending student* ***without*** *this being considered in relation to a particular programme of study". (CNAA Handbook 1991*

Whereas specific credits were,

> *"directly relevant to an individual student's particular programme of learning".*

A student might therefore gain general credits by the completion of one module on a course or by APL, but these would only become specific credits when accepted as part of an approved programme of study leading to an award.

The question of coherence was a useful one to consider in looking at how learning outcomes related to credits. What did coherence mean? and who decided what was coherent or not?

In theory there is a range of possibilities, from apparently free student choice (a 'pick and mix' approach) to a restricted number of routes, or pathways, through the scheme. A student was usually able to choose a number of themes, or major and minor subjects or major subjects with elective choices in different areas. Choice was often restricted to some options within a route, and there were other restrictions imposed by timetabling and prerequisites (one module had to be completed before or with another). The amount of flexibility varied from one institution to another, but it was clear that there were a range of rules, developed by academic staff, which governed coherence.

Some institutions offered students a greater choice than others, and some had more prescriptive views of what made an award coherent. Students following CAT programmes appeared to have greater flexibility, although in the end the programme of study they chose had to be approved by the staff. However flexible the scheme might be in principle there was always some irreducible core of modules or credits which had to be completed, the remainder might be filled by elective or complementary modules. Some core modules might form part of several different routes, while some electives (like a modern language, IT, or Business Studies) might be appropriate for many routes.

Clearly different institutions balanced the student and academic views of coherence differently. Some were clear that coherence was a matter entirely of academic judgment, made by the staff, in which case the routes were pre-determined, and offered limited or no choice. In other cases, it was, at least in part, determined by the student, in which case there was a wider element of choice. Some individuals and institutions clearly felt that students could bring their own sense of coherence to a degree programme, and provided they could justify a particular choice of subjects or modules, these might be permitted.

Employer views of coherence were more difficult to obtain, and varied widely. Some wanted more emphasis on generic competences and several suggested that the learning outcomes had described too many 'academic' ideas. One employer suggested that there was a need to "justify to students and employers" the inclusion of these learning outcomes.

Consultation with employers in the development of degree courses was, however, a very common practice in some subject areas, as were employer consultative groups which advised on curriculum content and in some cases provided examiners. There was clearly employer involvement in the institutional development of some courses, although not enough in the view of some employers.

Coherence, the cores and the clusters

The notion of coherence was useful in helping the groups to develop ideas about how learning outcomes might be clustered, and how core areas might be defined. It provided an alternative way to address the issue of grouping outcomes, avoiding the unhelpful separation of knowledge based outcomes from those relating to more practical skills and competences (a distinction which had proved to be a problem in assessing the outcomes). It also allowed outcomes which were common to all the subject groups to be identified, as common or generic outcomes, and outcomes which were specific to subjects to be separated.

5.5 Conclusions: Accreditation

Overall the groups took the view that it was neither necessary nor always possible to attach levels to all the outcomes of a degree programme. Levels based on assessment criteria could be developed and proved useful for some groups. It appeared that describing outcomes at the point of graduation was the most efficient and effective approach, and that there were then various ways in which student level and student progress towards that could be determined.

The determination of credit value proved to be more difficult, but was best approached through discussion of the coherence and balance of the whole award. Notional time played a part in determining relative value but was not felt to be appropriate as the first or the sole determinant of credit value.

Chapter 6

Accreditation: three approaches

This chapter describes and reviews some of the work on accreditation undertaken by the project subject groups. It describes three models based on general, subject specific and core learning outcomes.

6.1 Introduction

The workshops and the materials provided a useful basis for discussion within and between the groups, but it became clear that those individuals who had no practical experience of working with CATs or with a modular structure had real difficulty in developing ways of linking credits with learning outcomes. In consequence, almost all the groups went back to their existing degree courses and allocated the learning outcomes to parts of the degree programme or, where they existed, to modules or units. They then calculated the credit rating of groups of learning outcomes by working out the proportion of the year which each part of the course, or module, occupied. For example:

> *" for a course made up of six equally sized parts or modules in the first year, each module must carry a credit rating of 20 credits. "*

The relationship here is clearly between the course structure and the credits, and is not directly between the learning outcomes and the credits. Attempts to develop alternative approaches yielded some useful ideas although they did not provide a wholly workable alternative. The following section describes three approaches: two developed by subject groups during the project, and a third based on the curriculum model developed by Alverno College (USA).

6.2 General Learning Outcomes

The Design group identified five major design activities:

research and analysis,

planning,

creating and making,

communicating,

evaluating, testing, deciding.

These were described as clusters of learning outcomes, but were effectively a list of 'general learning outcomes', since the clusters of statements which accompanied then were used as assessment criteria. Each activity included a list of "learning outcomes". There were, in all, 69 of these and the six related to the 'planning' activity are shown in figure 6.1 below as an illustration.

Planning

To establish objectives and priorities, including personal aims.
To plan a strategy which will lead to a design.
To tackle many differing kinds of design thinking and practice at the same time.
To order and record information.
To manage their own time by plotting a way through required tasks and meeting deadlines.
To have knowledge of how to find employment, including setting up in business or freelancing.

Figure 6.1 - Design: Outcomes in Planning

In practice, the group did not attempt to allocate credits to the learning outcomes but chose instead to use them as assessment criteria. For example Sheffield City Polytechnic (which already operates a CAT system) divides its full time courses into 6 units per year, each unit accumulating 20 credits. Credit is awarded to students on successful completion of each unit, that is for "meeting the unit's requirements for directed learning". The 5 activities were weighted within each Design course, reflecting both the nature and stage of the course.

BA Industrial Design	Year 1 %	Year 2 %	Year 3 %
research and analysis	20	20	20
creating/making	40	30	30
planning	10	10	10
communicating	10	20	20
evaluating	20	20	20
BA Metalwork and Jewellery			
Research and analysis	10	10	20
creating/making	50	40	30
planning	10	15	15
communicating	10	15	15
evaluating	20	20	20

Figure 6.2 - Assessment Weighting of Activities in 2 Courses

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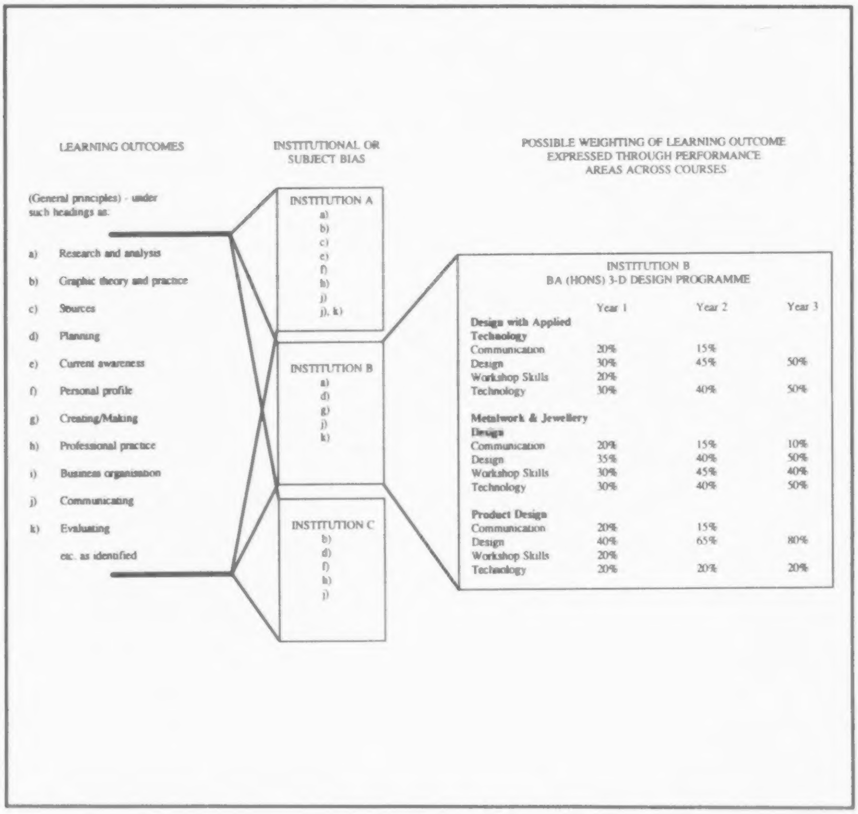
Figure 6.2 shows how three different institutions might use the activity headings (a-k), in different ways reflecting differences in the objectives, structures and ethos of their courses.


LEARNING OUTCOMES
INSTITUTIONAL OR SUBJECT BIAS
POSSIBLE WEIGHTING OF LEARNING OUTCOME EXPRESSED THROUGH PERFORMANCE AREAS ACROSS COURSES
INSTITUTION A
a)
b)
c)
e)
f)
h)
j)
j), k)
INSTITUTION B
a)
d)
g)
j)
k)
INSTITUTION C
b)
d)
f)
h)
j)

(General principles) - under such headings as:

a) Research and analysis
b) Graphic theory and practice
c) Sources
d) Planning
e) Current awareness
f) Personal profile
g) Creating/Making
h) Professional practice
i) Business organisation
j) Communicating
k) Evaluating
etc. as identified

INSTITUTION B
BA (HONS) 3-D DESIGN PROGRAMME

	Year 1	Year 2	Year 3
Design with Applied Technology			
Communication	20%	15%	
Design	30%	45%	50%
Workshop Skills	20%		
Technology	30%	40%	50%
Metalwork & Jewellery Design			
Communication	20%	15%	10%
Design	35%	40%	50%
Workshop Skills	30%	45%	40%
Technology	30%	40%	50%
Product Design			
Communication	20%	15%	
Design	40%	65%	80%
Workshop Skills	20%		
Technology	20%	20%	20%

Figure 6.3 - Three Institutions and Common Outcomes

The structure has some advantages, specific outcomes included in a module could be negotiated between staff and students, and students would be clearly aware of the outcomes they needed to develop in each unit and those they needed to satisfy when undertaking specific pieces of assessed work. The presence of clear criteria would also make it easier for staff to assess any evidence offered for the accreditation of prior learning.

A similar exercise was undertaken by the Social Science group, which used the learning outcomes to describe the requirements for progression from one year to another: some learning outcomes would be completed by the end of year one and others at year two and year three.

In this approach the 'learning outcomes' do not themselves carry credit, they provide instead a set of assessment criteria against which the student can be judged to have satisfactorily completed the whole module. A student will therefore receive either 20 credits or no credits.

6.3 Subject Specific Learning Outcomes

The Environmental Science group defined in detail a body of knowledge which, was essentially the syllabus of one of the courses. This had eight major knowledge based headings:

fundamental concepts,

characteristics, elements and structures,

environmental processes,

systems functioning,

complex inter-relationships,

origins and history,

multi-disciplinary nature,

managing the environment.

Each heading included a group of learning outcomes: for example,

> ***Environmental Processes.***
> ***Learning outcomes: the student should be able to explain:***
> ***- the range of physical processes which shape the land and transport sediment at the earth's surface,(learning outcome)***
> ***- the basic hydrological cycle,***
> ***- the process of photosynthesis (anatomical, physiological and biochemical),***
> ***- the mechanism of coupling of energy yielding and energy requiring processes,***
> ***- how environments in the past have conditioned the present day resources of mineral and coal.***

The group described separately a set of learning outcomes which it described as "practical learning outcomes":

Identifying appropriate equipment for lab and fieldwork

Handling of materials

Preparation of materials for experiment and analysis

Developing ideas in a research project

Field observation

Data analysis and presentation

Use of computers, modelling and mathematical approaches

Identifying and classifying organisms, soils and rocks

Experimental design

Site evaluation and assessment

Drawing up enviromental management plans

They also produced a third category, of personal outcomes:

Thinking

Speaking

Listening and responding

Interpersonal skills

Finding and reading source material

Writing

Developing independence

It was not realistic to credit rate each learning outcome, since the demonstration of the knowledge based outcomes necessarily involved some of the practical and personal outcomes and vice versa. One possible approach was to allocate credits to each area of knowledge, and use the personal and practical learning outcomes as assessment criteria for the learning outcomes.

a student should be able to explain the major classes of pesticide and their primary modes of action.

The assessment of this might involve the student in a range of different activities designed to demonstrate the practical and personal skills,

carry out laboratory work. This might involve experimental design, laboratory safety, data analysis and computer analysis and presentation of data, for example - present his/her findings to a group in a 15 minute talk.

It would not be difficult to consider each learning outcome from the knowledge section in turn, decide on an activity or activities which were appropriate to develop it and work out how it was going to be assessed. Each outcome would then have associated with it a set of detailed criteria describing exactly what

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the student had to do to provide evidence of achievement of that learning outcome.

This approach avoids using the course structure as a basis for allocating credits, instead it uses a series of so called areas of knowledge. This is an interesting alternative, particularly in the way it relates the 'harder' and 'softer' learning outcomes together, effectively ensuring, (or acknowledging?) that one is not acquired without the other.

6.4 Core Learning Outcomes

The Alverno College (Milwaukee, USA) ability based curriculum has been described and discussed extensively in the literature and was offered to the groups as a possible approach[18]. It is included here since it provides a complete contrast to the models described above.

The Alverno curriculum is described as "ability based and outcome oriented". It is entirely organised around eight key abilities at six levels, the abilities are described as follows:

analytical capabilities;

workable problem solving skills;

facility in making judgments and independent decisions;

facility for social interaction;

responsibility towards the global environment;

effective citizenship;

aesthetic responsiveness, involvement with the arts.

The six levels were derived from the Bloom taxonomy, but are seen as developmental stages rather than absolute levels, a student may therefore demonstrate an ability at level three without first being required to demonstrate levels 1 and 2. Levels 1 and 2 are regarded as a useful learning route however.

In order to graduate (Bachelor's degree), a student must have 32 units, that is s/he must have demonstrated all eight abilities at levels 1-4, plus a further eight units above level 4, and at least one unit at level 6. Subjects (Alverno offers 44 including Chemistry, Music, English and Nursing) are offered through the abilities, so for example Business and Management offer units which include problem solving at Levels 1-6, and valuing at Levels 1-3. However, not all subjects offer a full range of abilities : business, for example, does not offer units which include aesthetic responsiveness, so a student must complete a unit from another subject in order to achieve this ability. The degree is thus centred on the abilities which are achieved and demonstrated through the subjects.

The College believes that all the abilities can be developed and assessed, they are therefore a **requirement** of the degree, a student cannot "fail" one and graduate, however good s/he may be in the others. This requirement looks rather hard to those used to the UK model of compensation in assessment, but set in the context that the College believes and supports the idea that the abilities can be developed it sets a high but not impossible standard. The College degrees are accredited by State and National Bodies and employers are actively involved in reviewing the abilities and in the assessment of students.

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[18] See Alverno publications

An Alverno style model could be used as the basis of a structure for accrediting learning outcomes, assuming for the sake of simplicity that there were eight core learning outcomes (comparable to the eight abilities) then each of these might carry 15 credits at each CAT level. The learning outcomes for each subject could then be clustered around these eight areas and a student would achieve the 15 credits by demonstrating each learning outcome.

6.5 Recommendations - An alternative structure

6.5.1 The Findings

The three approaches described above are based on:

general learning outcomes, vocationally or practically related,

subject specific learning outcomes,

core (all graduate) learning outcomes.

The learning outcomes originally described by the groups had contained examples of each of these types of outcome. It also appeared that many of the problems the groups had experienced in linking credits with outcomes had concerned whether to start with the general, the specific or the core. The groups had also had difficulty in determining the relative weight (in terms of credits) of the three types of outcome, this was related to the difficulty some of them had in describing what they meant by coherence in a degree programme. A simple solution to the difficulties might be to create a model of the learning outcomes, in which the relative contribution of general, core and specific outcomes could be varied. This would allow the relative proportions of the different types of outcome to be clearly determined and this would help in linking credits to the outcomes.

The findings on the assessment of learning outcomes and the responses received from employers and students, also contributed to the development of a possible model. Most of the employers consulted responded positively to a set of what were described as common learning outcomes, which were not subject specific. These had been arrived at by looking for learning outcomes which were common to all five subject groups. Employer responses to the subject specific learning outcomes were less positive. Many employers stated that they were not interested in these since they recruited graduates from a wide range of subjects. Other employers suggested that they actually recruited graduates using a set of criteria which were not subject specific, and this is supported by much of the literature on graduate recruitment.

The student consultation similarly suggested that students were able to describe a number of common learning outcomes which were either vocationally related or were related to their personal and social development. Few students described subject specific learning outcomes, and those that did, tended to provide very general information.

The outcomes described by academic staff were by contrast largely subject related, although they did include both vocationally specific outcomes and core outcomes.

6.5.2 A 'curriculum model'

In the light of this there appear to be three possible models for accreditation, beginning from outcome clusters based on:

general outcomes

subject knowledge

core outcomes.

A Model Based on General Outcomes: Design

The Design group model begins with five practice based groups of outcomes. The weighting of these might vary according to:

the nature of the course (e.g. two or three dimensional design)

the institution

the stage of the course

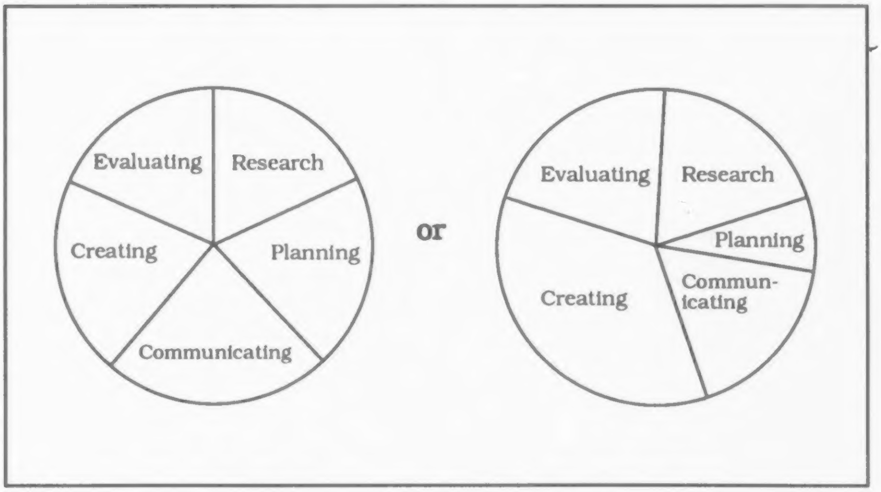
Evaluating
Research
Creating
Planning
Communicating
or
Evaluating
Research
Planning
Creating
Commun-
icating

Figure 6.4 - A General Outcome Model

The model might also include a set of core outcomes, common to all graduates.

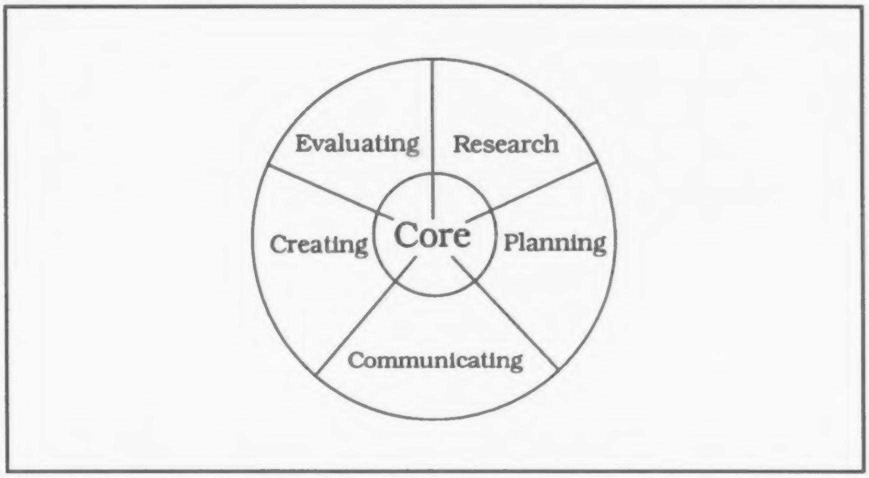

Figure 6.5 - Incorporating the Core

The core would not be taught or assessed separately, but outcomes would be achieved and assessed through the five practice based areas. Each of the practice areas includes a wide range of outcomes, some of which were knowledge based, and some skill based.

Relating the model to credit values could be achieved by calculating relative values. For example (from Fig 5.1) "Creating and Making" was weighted as 40% of year 1 and would therefore represent 48 credits at level 1. The achievement of that credit would be dependent on the student satisfying the outcomes listed within that heading - e.g.

manipulate design forms with a high degree of skill....

demonstrate an understanding of the use of colour through...

use a range of visual processes \(photography, drawing) to describe design ideas.

Precise assessment criteria for these outcomes were developed through discussion with student groups.

A Model Based on Knowledge: Environmental Science

The Environmental Science group described 8 major areas of knowledge, 11 practical outcomes, and 7 personal outcomes:

The relative weighting of the knowledge areas might again vary between courses and stages of a course.

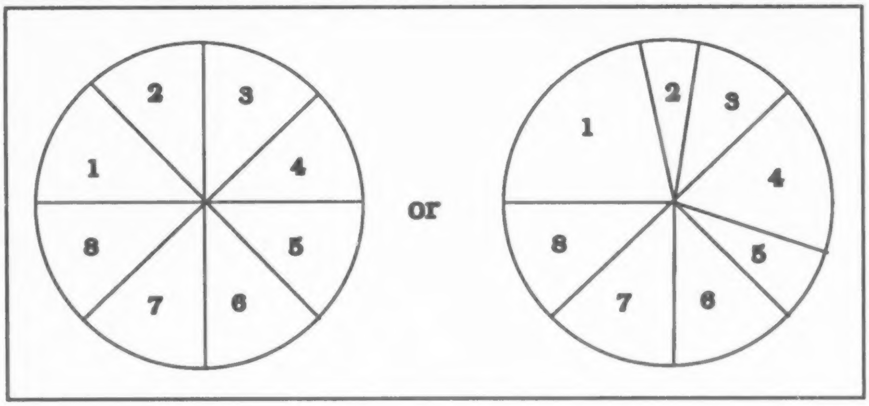
2
3
1
4
8
5
7
6
or
1
2
3
4
8
5
7
6

Figure 6.6 - A Knowledge Based Model

The personal outcomes would form a part, or all, of the core. The practical outcomes would represent a second dimension of the model, which might be represented as follows.

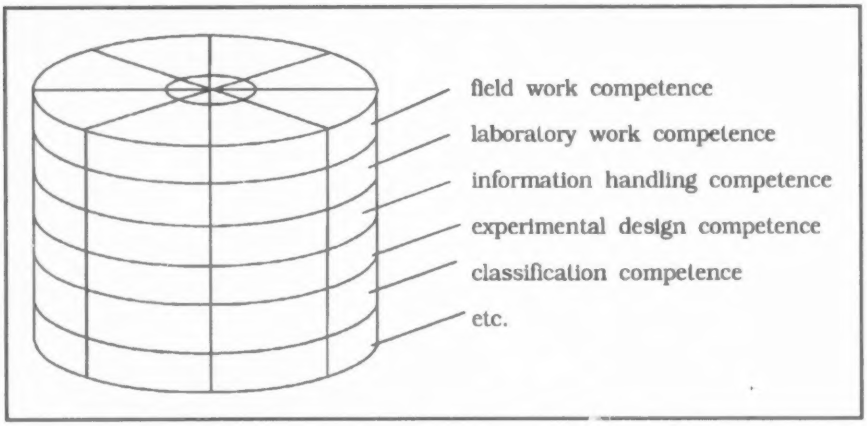
field work competence
laboratory work competence
information handling competence
experimental design competence
classification competence
etc.

Figure 6.7 - A Second Dimension

A Model Based on Core Outcomes: Alverno

The Alverno College model begins not from general outcomes or knowledge, but from the core outcomes or "Key Abilities" which are effectively an expanded core. These are:

analysis,
problem solving,
decision making,
social skills,
environment,
citizenship,
aesthetic.

Credit value attaches primarily to the Abilities rather than to the subjects, which provide a vehicle for the development of the abilities.

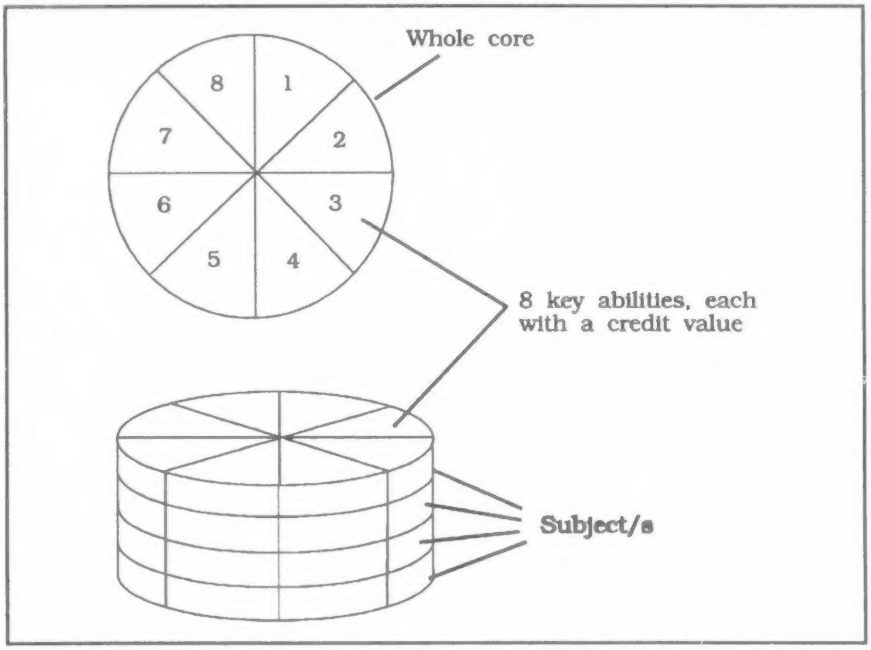

Figure 6.8 - A Core Based Model

6.5.3 Credit without time

The use of the 'curriculum model' makes it possible to determine relative credit weightings for different groups of learning outcomes without reference to time. The two groups (Design and Environmental Science) considered the effect this would have on the delivery of the course.

Design

One of the Design courses was currently modular, with students completing 6 modules per year, each carrying 20 credit points. The Design course was based on a series of projects, students were provided with a 'brief' and required to produce a design to meet its requirements. When the credits were related to the outcomes, rather than to the course modules, the modules simply provided a set of learning opportunities (the projects) through which the students demonstrated that they had achieved the outcomes. This would place much greater responsibility on the student to make certain that s/he was providing evidence to meet the requirements of each outcome. It would require staff to play a more facilitative role to support and advise students, and provide them with feedback on progress.

Environmental Science

The Environmental Science course structures were very varied. Some courses were modular and offered students a range of options, while others were structured as a linear programme without any options. Two of the courses did not use a credit structure, but it was relatively easy to see how the achievement of outcomes could be related to the credit scheme. Some elements of the course were designed to provide opportunities to demonstrate particular outcomes related to the eight areas of knowledge, and it was not difficult to relate these to credits.

One course was modular and had recently introduced learning outcomes into module descriptors. Credits, however, were related to the size of module, measured in 'notional learning time' rather than to the achievement of the outcomes. Further, since it was not clear that the assessment methods used in the modules actually related to the outcomes themselves, it was not clear whether there was any direct relationship between the identified outcomes and the credits awarded.

Section 3

Findings and Conclusions

Chapter 7

Findings

This chapter presents the overall findings of the work in three parts. It outlines the intentions, conclusions and achievements of the project; comments on the findings about learning outcomes; and the process of defining them.

7.1 Introduction

7.1.1 Objectives of the project

The purpose of this project was to examine the feasibility of describing a degree in terms of its outcomes - what a graduate can do, know and understand.

It began from the premise that a degree is currently described in terms of the process - three years full time study - rather than achievements, and that, as a result, notions of quality are based on the process, rather than the outcome. This approach may be increasingly difficult to sustain as many of the elements of the traditional process are removed or reshaped in the move from an elite to a mass higher education system. It can no longer be assumed, for example, that most higher education operates with low staff-student ratios, a homogenous student body or single subject based three year full time degree courses. A continuing fall in the unit of resource, coupled with rising student numbers will continue this pressure.

The project proposed that a stronger focus on outcomes would enable quality assurance processes to be more transparent and rigorous. While it may be possible to achieve the same outcomes by other processes, if the outcomes of the traditional model are not adequately described, there is no way of assessing the impact of changes on quality. Adequate ways of describing outcomes are therefore essential to the defence of quality in a rapidly changing context.

It was also believed that the description of outcomes alone would not solve the problem, and that it was essential that those outcomes could be assessed, and recognised in systems of accreditation. Credit would thus be more directly linked to explicit achievement. A further benefit of the approach would be in the increased ability to recognise and accredit prior learning, and learning undertaken outside formal classroom settings.

The project's aim was exploratory and developmental. It sought to find ways of recognising the full range and diversity of achievement which existing degree programmes represent, not to narrow or constrain them. It therefore set out to investigate a range of approaches with practising academics, rather than to impose a pattern or methodology.

7.1.2 Key Conclusions

The project work points to the following key conclusions:

- it is possible to describe the outcomes of higher education more explicitly, although they cannot be expressed in simple 'can do' statements, and, in a complex and changing environment, such definitions will never be complete or fixed;
- descriptions of learning outcomes in higher education cannot be expressed as a single set of 'national standards' of the kind developed for national vocational qualifications, since higher education exists to meet the needs of a variety of client groups and a range of social, economic, scientific and cultural needs, and properly embodies a range of different cultures and value systems;
- it is necessary to develop processes within each institution to link outcome definitions with quality assurance, since the authority to define the purposes of degree programmes rests with the chartered institution, rather than with any national agency;
- the principal benefit in an outcomes led approach lies, therefore, in providing a focus for staff, students and employers to examine more clearly what they are seeking to achieve, and in enabling them to contribute actively to the development of a common understanding of the nature and purposes of higher education and of specific programmes and awards;
- the process of defining and accrediting outcomes can best be seen in terms of a four stage cycle:

  preliminary definition by academic staff,

  design of an assessment strategy,

  production of a 'curriculum model' which weights the various types of outcome - core, subject specific, general and other,

  allocating credit value to groups of outcomes;
- a range of materials and approaches exist to help in the definition of outcomes. These include models based on objectives, subject knowledge, the discipline and competence. No single one has been demonstrated to be ideal and there may be advantages in using more than one;
- if quality is to be assured it is important that the assessment and curriculum modelling stages of the cycle are carried out before the allocation of credit value;
- the definition of outcomes should not be separated from an investigation of assessment since outcome definitions which are not assessable are not of any practical value;
- an outcome led approach requires staff to develop and use methods of assessment which measure achievements directly, but current assessment practice tends to neglect these questions of validity in favour of

reliability, and many academic staff lack experience of appropriate approaches to assessment;

- employers are, in general, more concerned with the "core" learning outcomes of higher education than with general or subject specific ones;
- students can play a particularly valuable role in the development of approaches to assessment, and this dialogue can itself help to increase their motivation and advisement;
- the definition of learning outcomes is considerably helped by the use of cross-institutional subject groups, which provide a broader contrast of perspectives than is possible in a single institution. Opportunities for this kind of staff development appear to be rare.

7.1.3 What was achieved?

The project has helped to "flesh out" ways of describing learning outcomes in higher education, to clarify who can and should be involved in their development, and in what ways, and explain how they might relate to NVQs. It achieved two things:

- it tested and refined a collaborative model for the development of learning outcome statements, working from within the academic culture, rather than by imposing managerial models from outside. It tried to develop outcome definitions through an iterative and collaborative process, using academic subject specialists, and seeking a consensus. It sought to capture the essence of what it means to be a graduate in engineering, or in design. The project used a very simple experiential approach, based on the belief that the solution lay in helping practising academic staff to make their tacit knowledge and understanding explicit and public, rather than through the simple application of external theory;
- it produced a quality development model which links the definition and assessment of outcomes with an approach to coherence and a credit framework. This has important implications for the quality assurance of all learning in HE but especially for learning which is not part of a course, (like some work based learning) and for the accreditation of prior learning.

7.2 Findings about Learning Outcomes

7.2.1 Linking the Elements

In many respects the most significant finding of the project is the importance of linking the description of learning outcomes with the development of an assessment strategy and with a credit accumulation structure.

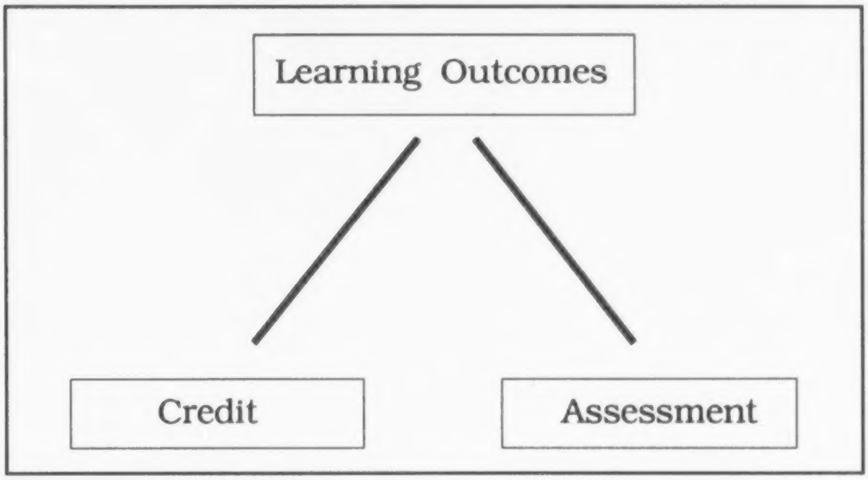

Figure 7.1 - The Elements

This relationship seems simple but proved difficult, because some aspects of all three notions are unfamiliar to many academics. The superficially simple steps required clear and explicit definitions of principles and practices which were often implicit and tacit, and which embodied deep seated cultural values. Learning outcomes were, for most staff, the outcomes of courses, and it was easier to describe the course in terms of what was taught, than to describe what students were expected to achieve. Working in cross institutional groups helped, since the different experiences of group members showed that the learning could be packaged in different ways, and at different stages and that, although there were differences in courses, there was much in common in terms of what students were expected to achieve.

Reviewing methods of assessment and examination questions was also useful, but approaching the problem entirely through a review of assessment, was limited by the narrow range of assessment methods in use and by the evidence that much current assessment was more closely linked to successful completion of the course, than to demonstrating the achievement of outcomes. Overall, the description of learning outcomes was difficult to disentangle from notions of courses and objectives. Staff with some experience of APL, of assessing work based learning, or of CATS schemes had an advantage here.

The groups recognised the need to identify a variety of kinds of outcome, but found that it was important not to divide learning outcomes into groups which separated factual knowledge from competences, practical skills or personal skills, since this posed problems when attempting to assess the outcomes separately.

7.2.2 The Importance of Assessment

The project's work on assessment was very much more important than anticipated at the start. Just as many staff found it difficult to express what the intended outcomes of their programmes were, so the methods of assessment they used often failed to measure what they were seeking to achieve.

The work on the assessment of learning outcomes proved easier for some staff to tackle and was clearly work which they regarded as of immediate personal relevance. Previous expertise in assessment was very varied and what was regarded as innovative in one group was seen as relatively mundane by others.

The work on assessment stimulated more short term changes in thinking and practice than did the development of the learning outcomes themselves. In retrospect it is clear that, had the workshops on assessment been provided at an earlier stage , they would have focused the descriptions of learning outcomes more sharply and helped to avoid some of the less productive debates.

Problems

The requirement to assess the outcomes which had been described exposed some serious problems with assessment generally:

- for some academic staff, experience of assessment was limited to a small range of relatively traditional methods, which were not applicable to some of the outcomes they had described;
- most staff gave undue weight to the reliability of assessment, at the expense of validity.

It was necessary therefore to make some imaginative leaps in the development of different approaches to assessment. The project has only touched on these and there is a clear need for further work.

An Experiential Approach

The project used a simple experiential strategy, providing advice and information and encouraging staff to develop ways of assessing the learning outcomes they had already described. This approach, which required staff to apply the critical skills which they used in the study of their own subjects to the development of alternative forms of assessment proved to be very successful and did not require an extensive or complicated external staff development programme.

Assessment strategy

The solution to the assessment problems encountered within the project does not lie simply in the adoption of a number of new assessment methods, but in the development of a coherent assessment strategy.

The project experience suggests that changes in assessment need to be accompanied by a consensus amongst the staff about what was being assessed, not just about how to do it. The adoption of a different approach to assessment by one member of staff led to confusion amongst students, who felt that they were being asked to produce one sort of work for one member of staff and something different for the rest.

The student input to the project was also important at this point since it demonstrated that students were able to work with the learning outcomes to develop and agree standards and criteria for assessment. This suggests that the outcomes could be used to develop greater learner independence, as well as more active and learner centred approaches to learning.

The assessment pilots made an important contribution to the project since they demonstrated that it was possible to assess some of the learning outcomes which staff did not currently assess, and which some people had regarded as impossible, too time consuming, or too subjective to assess. Students also suggested that they were not always clear about the criteria being used by the staff in assessing their work. This lends weight to the view that clear descriptions of learning outcomes would be of benefit to students.

Grading

Overall the description of learning outcomes does suggest that if a clear link can be made between outcomes and assessment the requirement to grade a student may be redundant. However, the question of whether, and how, to grade the assessment of learning outcomes remained unresolved. Some staff clearly felt that it was unnecessary to grade all work, and wholly impractical to grade the assessment of some learning outcomes. There was some reluctance to address the question of grading in relation to a degree, although the concept of an undivided Honours degree was discussed. Such decisions need to be made by course teams as part of an overall decison on assessment strategy, this needs to reflect the culture of the institution and the course.

7.2.3 Outcomes and Credits

The project work suggested that it is possible to build a link between outcome and credit, but that this can only be achieved if the outcomes can be assessed. Since outcomes in themselves have no credit value they need to be clustered into groups of outcomes which can either be constructed by dividing the final award into parts, or by assembling 'units' by clustering outcomes directly.

The ability of the academic staff in the project groups to relate outcomes and credit value was limited by a lack of experience of credit accumulation schemes and by the lack of a general consensus about key terms like coherence, balance and level. As a result, although it was possible to describe learning outcomes, it was not easy to move directly from these to a notion of relative value, and thus to a structure for the award of credit. Staff therefore tended to relate their outcomes directly to credits, using traditional course structures and 'notional', or actual, learning time as a basis for determinig credit value.

The problem with this approach is that in bypassing assessment, a crucial dimension of quality assurance is lost, because credit is being allocated to teaching processes and not to learner achievement. Learning outcome statements tended therefore to be indistinguishable from course objectives, and any learning which was not course based had to be calibrated against a formal course. This effectively kept the course at the centre of the structure and preserved the paradigm of a process, rather than outcome, based degree.

7.2.4 Outcomes and Coherence

In an attempt to address this issue, the project suggested that the link between learning outcomes and credits is best made through an intermediate structure, which provides a means of determining the relative value of learning outcomes, without recourse to teaching time. This proposed structure can be seen as a model of coherence in an award, or as a 'curriculum model' which would recognise the existence of several kinds of outcome within the same award. Figure 7.1 shows a way of presenting this. Individual degrees would have the three elements in varying proportions.

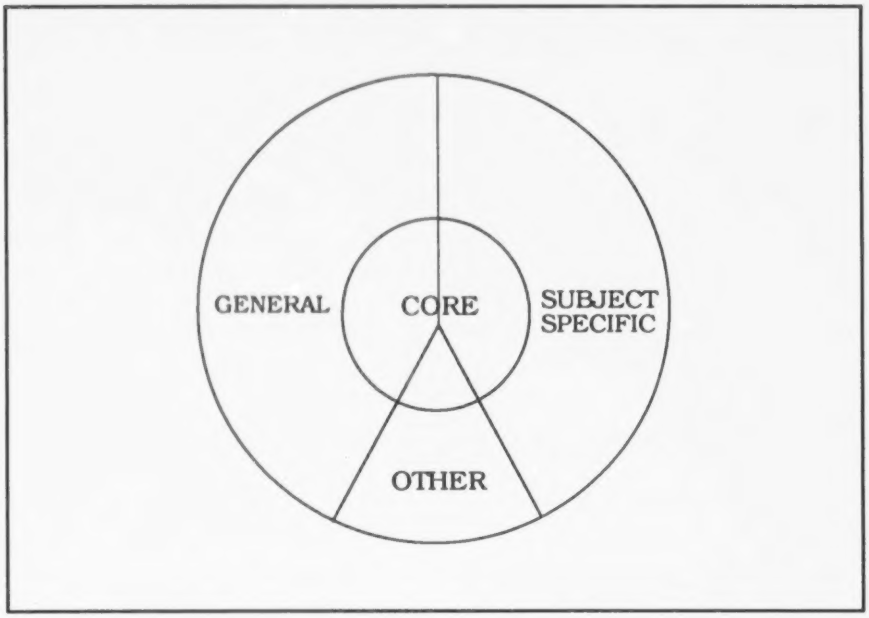

Figure 7.2 - A Model of Coherence

The employer and student input proved useful at this stage since it made clear that both groups were concerned with a relatively small but overarching group of 'core' graduate outcomes, which applied to all degrees regardless of subject. There was also evidence from the groups that a consensus on the core might be fairly readily achieved, since there was considerable overlap between some of the outcomes described by the groups, and a number of common strands can be found in definitions of 'core' used elsewhere in education and training.[19] The 'core' would provide a broad description of the outcomes which employers, students and broadly speaking, society in general, expected a graduate to achieve. The national experience of the development of core skills and competences showed that they need to be integrated into programmes of learning, not added onto them, and that they needed a subject, or an applied context in which they could be developed and assessed. The core needed therefore to sit at the centre of the model.

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[19] See Note 4

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The project exposed the debate on the meaning of level, coherence, breadth and depth in relation to an award. Here the processes of collaboration and consultation have helped to show that these questions are closely related to both the values of the subject/discipline and the mission of HE itself.

7.2.5 Types of Outcome

In view of the diversity of cultures and value systems embodied within higher education, a model of coherence needs to be able to recognise more than one kind of outcome. The balance between these would vary between awards and institutions. There would appear to be at least four 'types' of learning outcome:

Core Learning Outcomes

These represent those qualities generally identified with the notion of 'a graduate' and must be achieved by all graduates regardless of subject.

Examples produced during the project which would fall into this category might include:

ability to communicate complex information to a variety of audiences

ability to make independent decisions and judgements

time management

ability to accept and learn from criticism

Some employers proposed a rather different kind of core outcome:

the ability to understand the reality of business problems and the relationship of specific tasks to overall economic objectives

The notion of core outcomes was not contentious in itself and there is probably a broad consensus about them in higher education, albeit not an explicit one. It seemed likely that in many cases these outcomes were achieved by most graduates, and that presenting them in this way simply formalised that. However, assessing and awarding credit to them would be a way of making clear to graduates and employers, that they were an essential, rather than optional, part of the degree. This would be consistent with the ideas on assessment developed in Chapter 4, where it was clear that outcomes such as these were not independent of the subject, or learned in separate classes (called, for example 'problem solving'), but were required outcomes of several different areas of a students work. A student might therefore be required to present several different pieces of evidence to demonstrate her/his problem solving ability.

The relative size of the core might vary between degree programmes. At its extreme, the model presented by Alverno College[20], presents the whole degree in terms of core outcomes, with the subject material being built around this. A more common model would have a core at its centre, with elements of the core assessed in different parts of the programme.

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[20] See Chapter 5

There are a number of models of core which might be appropriate. The project derived a simple set by mapping the common elements of the material produced by the separate subject groups, but several alternative, and more carefully developed, models exist. [21]

Subject Specific Learning Outcomes

These reflect the values and culture of the academic discipline and are closely related to the specific subject of the degree. They describe the qualities implicit in the notion of an 'engineer' or a 'historian'.

> ***knowledge of the present day functioning of major social institutions. This is a personal quality which arises from the nature of the Social Sciences. A specific example would include the ability to evaluate a report on institutional change within the Church so as to highlight those assertions which are insufficiently underpinned by adequate evidence of cogent argument***
> ***- Social Science***

> ***to apply a visual vocabulary, to relate shapes and forms and to express them***
> ***- Design***

> ***ability to calculate energy values and forces present when elctromagnetic induction is produced by interacting electric and magnetic fields***
> ***- Engineering***

> ***exlpain the priorities offered by "green" and conservation opinions***
> ***- Environmental Science***

The description of subject specific learning outcomes again depended on the nature of the subject or subjects, and on the awarding institution. These might form the largest category of outcomes in a single subject degree, but a smaller proportion in others.

The subject outcomes were related to the title of the award and might reflect single, joint or multiple subjects. These outcomes related to the study of the subject, and included subject, or discipline, related concepts and methods of enquiry as well as a range of types or categories of knowledge. In general, these outcomes would be common to degrees with the same name offered by different institutions, although degrees would vary in how many were included, and how they were clustered for assessment and accreditation. There were significant differences of this sort within the project subject groups. [22]

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[21] Note 4 identifies some of these.

[22] See Chapter 3.

General Learning Outcomes

These would reflect the underpinning skills needed in employment and might include requirements to practice in particular occupations. They might be common to several different subjects but not to all graduates, and might include learning outcomes which crossed several different subject areas.

This was also an area where NVQ units in specific areas could be included and count for credits within a degree programme.

> ***understand common financial terms***
> ***- Design***

> ***safe and correct handling of materials in the laboratory and the field, e.g. handling micor-organisms safely using aseptic techniques***
> ***- Environmental Science***

> ***ability to decide between alternative courses of action in an engineering setting***
> ***assess energy saving methods to achieve minimum operating costs***
> ***select and reject manufacturing processes to produce a specific component most economically***
> ***recommend techniques to minimise failure/maximise life of materials and components***
> ***- Engineering***

> ***knowledge of a range of teaching techniques which can be used and adapted to communicate different types of material***
>
> ***...specifically to lead a group discussion on changing conceptions of the society/environmental relationship; ability to direct a role play exercise on the topic of journalists' right to protect their sources; ability to plan a series of seminars ..about the peresentation of women in the British cinema***
> ***- Social Science***

These outcomes also varied according to the subject and to the institution. In some cases the degree was effectively a professional qualification, or a precursor to one, and the outcomes reflected the need for the student to be able to practice in a profession, as well as demonstrate an academic knowledge of the subject. In others there was relatively little, or no, weight given to vocational outcomes, or they were treated in very general terms. This was the point at which the place of NVQ awards and units became clearer, since they might well form all or part of the vocational outcomes of a degree. The fact that they would be externally defined and might be assessed in different ways from other outcomes need not present a problem within the proposed framework of coherence.

Other learning outcomes

There might also be other types of outcome. Individual institutions might wish to specify other outcomes in this category, related to their particular institutional mission, adding, for example, languages, enterprise or environmental outcomes to all their degrees.

Chapter 6 presents a possible approach to award design based on this model.

7.2.6 A Quality Cycle

The process can thus be seen to have four stages, in a logical order, and implying a continuing cyclical review which enables each part to be reviewed in the light of experience. The four stages are show in Figure 7.2.

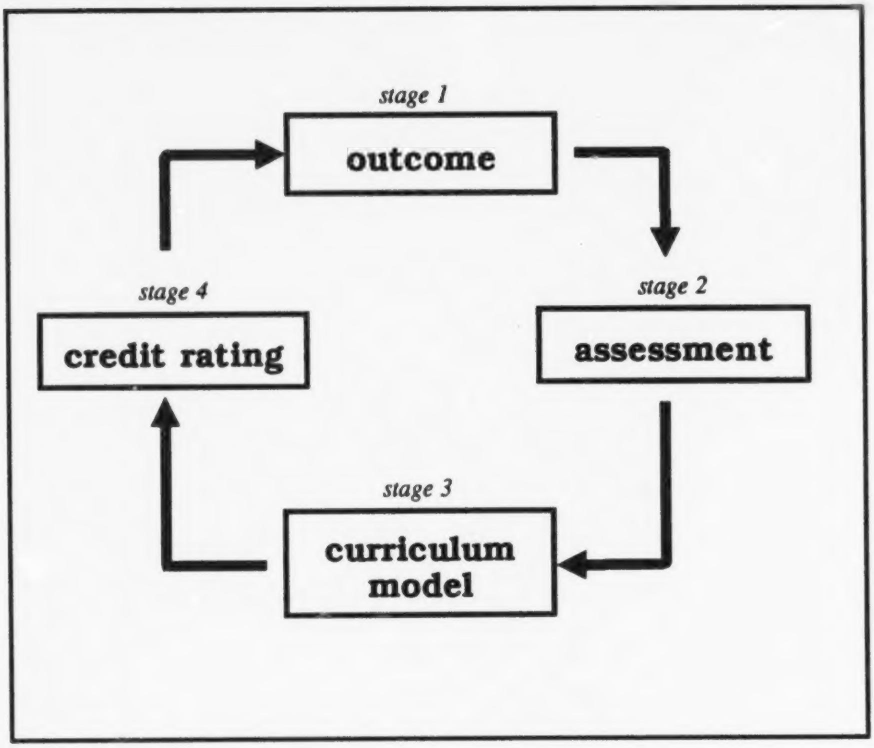
stage 1
outcome
stage 2
assessment
stage 3
curriculum model
stage 4
credit rating

Figure 7.3 - From Outcomes to Credit: a Quality cycle

7.3 Findings - Ways of Working

7.3.1 Working with Cross-Institutional Subject Groups

It would in many ways have been easier to achieve the project's primary purpose by appointing a single subject specialist for each area, rather than to use groups of staff. However, the Project Steering Group agreed to use cross institutional groups, to provide cross fertilisation and diverse perspectives on each subject. They also believed important to test whether such work could be carried out effectively by practising academics rather than educational researchers. The project found that:

- the groups were intrinsically valuable in providing an opportunity for experiential staff development, of a kind rarely achieved in the occasional seminar. The variations between the members of the groups, the institutions they represented and the courses they taught were vast, and developing an understanding of these approaches was both useful for the staff concerned and valuable for the project. This proved a genuine manifestation of the "academic community" which, in other ways seemed notably absent from the institutional work.

- the groups provided an opportunity, which did not previously exist, to discuss at length and in detail matters like course content, approaches to teaching and learning, course design and assessment. Such opportunities are normally available only to external examiners and those invited to take part in peer review and validation exercises.

- the consultative document stimulated debate and development work in institutions not directly involved in the project, and the responses stimulated further debate and development in the project institutions. Although the document was acknowledged to represent 'work in progress' rather than a completed model, it elicited a wide range of approving, constructive and critical comment.

Characteristics of success

Although the groups and seconded staff achieved most of the objectives set, it was clear that some were more successful than others. The characteristics of the former were:

- previous experience of either a modular course or a CAT credit system (Some simply required a longer period of time to assimilate all the ideas)

- experience of course development, or of a modular or credit based system to which they could relate their work.

- a position within their department which provided an overview or context for the work and its implications. (Some individuals lacked a clear view of their own overall course structures and brought a rather narrow subject perspective to the thinking of the groups).

- a clear understanding of credit transfer, or the CNAA CAT credit system and its implications. (When attempts were made to link the learning outcomes to credits, some groups and individuals realised that they needed to adopt a completely new approach to thinking about courses and to how they assessed students. Others tried, with little success, to fit the learning outcomes to existing course structures, resulting in enormously complicated and confusing lists of credits and outcomes).
- availability of adequate time. (Despite careful agreements drawn up with institutions, some staff came under severe pressure of work which prevented them from participating fully).
- an ability to make a conceptual leap to view their subject from a new perspective. (Not all staff appeared able to do this).
- adequate institutional support and internal networks for communication and debate. (With some exceptions, group members worked in isolation in their institutions, receiving little or no support from colleagues and having, or taking, little opportunity to discuss their work with colleagues).

Problems

Overall the strategy of creating small subject groups worked well. It produced the materials required and was clearly of benefit to the individuals taking part. However it failed in some respects to have the impact sought. The ideas developed and discussed in the groups did not penetrate successfully into the institutions they came from, and the opportunity for colleagues to make a critical input, and for the ideas to be generally shared was therefore lost. There are probably two reasons for this, the first was the failure of the project to establish and sustain links with senior management and with institutional quality assurance processes. The second was a failure of the project to create links with existing staff development structures in the institutions and with parallel work on 'enterprise' which was ongoing in several of the institutions during the project. It may be that, as a result of recent developments in quality assurance and staff development, the strategic significance of these ideas would be more clearly recognised now than it was at the beginning of the project.

Interestingly, it would appear that the most active development of the project ideas has been in institutions which expressed initial interest, and maintained contact with the project, but were not selected to participate. By contrast, it appears that most of the institutions which took part in the work have not developed the ideas further.

The consultation succeeded in stimulating discussion about the work and attracted a wide range of responses and opinions. The majority were positive, welcoming the thrust of the work and providing constructively critical comments on the learning outcomes. However, it was clear that many readers did not understand the purpose of describing learning outcomes and expressed fears about narrowness, reductionism and 'vocational drift'.

Surprisingly, there was considerable support for the 'ad hoc' structure of levels which had been developed as a crude means of presenting the stages in working out the learning outcomes, and was presented in *What Can Graduates Do?*.

7.3.2 Working with Students

The student workshop model was undoubtedly a success. It required students to respond individually and in groups to key questions, and to list and agree the learning outcomes they expected to/had achieved. The findings suggest that the workshop is a robust and cost effective strategy which could provide a simple means of sampling student perspectives on learning outcomes.

Many students welcomed the opportunity to discuss their views of learning outcomes and to express what they were seeking from their courses. Some of the academic staff working on the project expressed surprise that their students had such a wide range of views on their learning and were surprised at the depth and detail of the responses. Several staff reported the findings of the workshop as being valuable in terms of curriculum design and course development.

The outcomes described by students were much broader than those described by the staff, almost half the outcomes which students anticipated or felt they had achieved were in the personal and social area, whereas only one quarter of the outcomes described by staff were in this area.

The assessment pilot work also demonstrated the value of involving students in the discussion of outcomes. Students found the clarity of the outcome statements helpful in understanding what was expected of them, and the focus on assessment helped them to be clear about what constituted relevant and appropriate evidence of achievement.

7.3.3 Working with Employers

The employer consultation provided some useful feedback on the learning outcomes themselves and on employer views of the project generally. The latter were all very positive and constructive. However, the overall response rate is disappointing, although perhaps unsurprising. It is particularly unfortunate that the majority of responses were from personnel staff rather than line managers: several covering letters suggested that line managers were 'too busy' to contribute in this way.

The most important finding from this exercise was that the majority of employers welcomed the general learning outcomes but ignored the detailed subject learning outcomes, many respondents wrote that they recruited graduates of any discipline and that therefore the subject specific learning outcomes were not relevant to them. This was surprising, since many of the learning outcomes identified under the subject specific headings document were very general and included broad generic qualities like communication, planning and group work. It was also disappointing since the subject specific outcomes had been specifically written to indicate to employers that some degrees developed learning outcomes with wider applications than the study of the particular subject. Nevertheless, the detailed responses which were received were helpful and several included lengthy comments on the material as well as including further information from their own experience.

Chapter 8

A Model for Quality

Previous chapters have outlined the project aims, processes and findings. This chapter draws on all this material to present a model for development in individual institutions. It proposes a four stage model linking learning outcomes with quality assurance processes.

8.1 The Model

The model shows how learning outcome statements might be developed and used in higher education institutions. It describes who might be involved at each stage and how outcomes link both to credit structures, assessment and teaching systems.

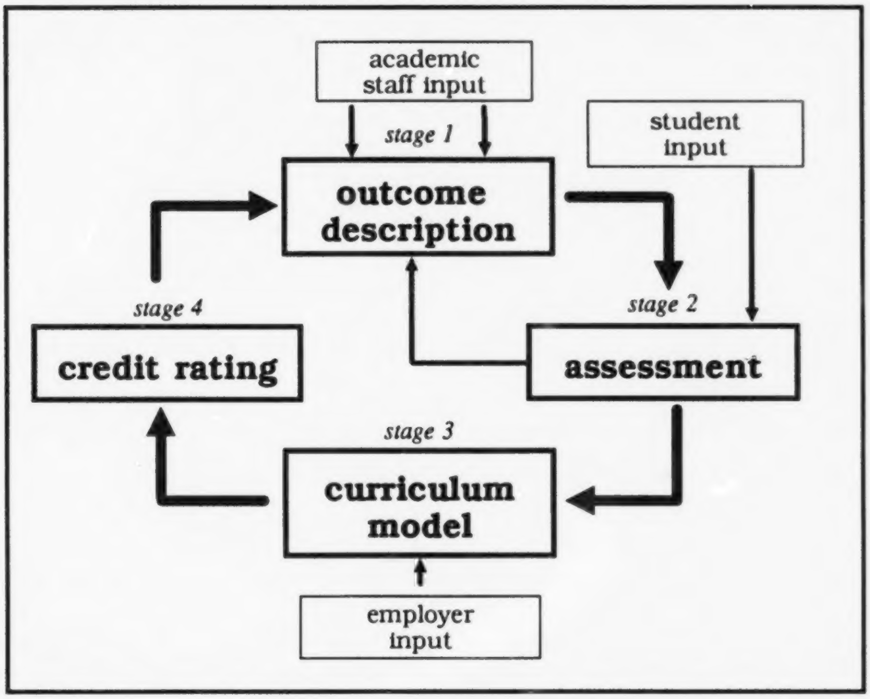
academic staff input
stage 1
student input
outcome description
stage 4
stage 2
credit rating
assessment
stage 3
curriculum model
employer input

Figure 8.1 - A Model for Quality

Stage 1 - Description

The first stage is concerned with describing the outcomes of a degree course. This may be done on the basis of an existing degree, or by describing the intended outcomes of new programmmes. It is not necessary for all the outcomes to be expressed in the same form, and indeed this may be a disadvantage, since, within higher education, and single degree programmes, there are a range of purposes and value systems. Thus the form of outcome statements related to core skills may be different from general or subject specific ones.

The model proposes that, in the first instance, description should be the responsibility of academic staff, since it is they, rather than external agencies who are resposible for standards in chartered degree awarding institutions. The project experience suggests that this will require an iterative and collaborative process which seeks to make more explicit the many implicit outcomes expected of a graduate of a given programme. While the process needs to be institutionally based, it can be effectively facilitated through collaborative work by specialists from different institutions, or from different parts of the same institution. The process is complex, and the outcome descriptors are unlikely to be simple 'able to...' or behavioural statements.

Chapter 2 offers examples of how the project groups worked and of the sorts of learning outcome statement which they developed. Three main approaches are recommended, based on one or more of the following:

Subject Knowledge

Discipline

Competence

The first of these might usefully call of one or several of the existing published models for structuring professional knowledge, which provide a helpful start point to build indivudual models. Some standardisation of language is also an important step, and structures like Bloom's taxonomy proved useful in developing a consensus on the meaning of words like "understand" and "explain". The second approach called for the elicitation of the tacit values of the discipline. The third approach involved the use of techniques like functional analysis to develop a better model for describing vocationally related outcomes.

Stage 2 - Assessment

If learning outcome statements are to have any function it must be possible to assess them in some way (although this must not be taken to imply that all, of even most, outcomes are susceptible to crude testing). The project showed clearly that the requirement to assess outcomes was important in three ways:

- it clarifies for staff and students what the student is required to achieve;
- it forces staff to examine the validity of assessment methods by relating assessment directly to outcome. The project experience suggests that staff often become unduly concerned with questions of relaibility of assessment, at the expense of validity;
- it provides an iterative feedback loop, to enable staff to refine the outcome statements themselves.

The student input may be particularly helpful at this stage of the cycle, since the students have a very direct concern with the form and process of assessment, and the project suggests that discussion of assessment is a particularly helpful way of focussing students understanding of outcomes.

The outcomes can provide the basis for the development of an overall assessment strategy, avoiding a cumbersome and piecemeal 'outcome by outcome' approach to assessment. Chapter 4 provides some examples of assessment development and discusses some of the questions and problems raised at this stage.

At the end of the assessment stage it may be necessary to review the outcome descriptions, since the consideration of assessment is likely to have shed new light on them, and they may need some redrafting.

Stage 3 - Modelling

This stage relates the learning outcomes to a model of the 'curriculum'. The stage is important because it shapes a potentially fragmented list of outcomes, of varying sizes and kinds, into a coherent model of the award. As many respondents to *What Can Graduates Do?* commented, the whole may be more than the sum of the parts, and a long and detailed list of outcome statements without structure may be unmanageable .

The stage is not only important in the development of courses, but in creating a model of a degree for credit accumulation purposes. It helps to recognise diverse notions of coherence, and the range of value systems and purposes which exist within higher education, and among its client groups.

The model can vary greatly in form and can relate outcomes of different kinds. The project identified several different models, which are described in Chapter 6.

The modelling process provides a way of determining the relative value of the various kinds of outcome of the programme. The views of employers can provide a helpful input at this stage, in helping to define the 'core' outcomes and the balance between the elements of the award. This is also a stage at which outcomes derived or taken from National Vocational Qualifications could be incorporated into a degree.

Stage 4 - Credit Rating

This stage relates the outcomes from the model to the CNAA CAT credit scheme. This raises the question of levels within the scheme, and how they are defined and understood, Chapter 5 provides some suggestions, but overall there is a need for greater clarity in this area, particularly in the distincton between learning at Level M and at other Levels. The relationship between CAT levels and the levels described by NCVQ also needs further investigation and clarification.

8.2 Measuring Quality

8.2.1 Establishing criteria

The evidence that a learning outcomes approach is useful is drawn from several quarters, from the responses to the consultative documents and exercises, from the staff involved in the work and from the several institutions and organisations which have pursued the development of learning outcomes in parallel with the project, or following on from it.

The measurement of quality in higher education, has traditionally been difficult to separate from the processes of course delivery and the tacit internal values shared by academic staff, and it has been hard for those who are not members of the culture to gain access to, or understand the criteria by which quality is judged. Learning outcomes have provided a means of exploring and describing these criteria and of relating them clearly to assessment and to credits. This has helped to establish better criteria through which the quality of the teaching and learning processes in higher education could be measured.

8.2.2 Course Documentation

One of the more worrying findings of the project was that existing course documentation prepared for the purposes of validation and review did not prove helpful to many of the groups in describing either learning outcomes, or assessment strategy. The descriptions of aims and objectives in many course documents was very vague, and the documents did not, in many cases, relate the objectives to assessment, many merely stated the relative weightings for coursework and examinations.

If course documents were to provide details of learning outcomes, this would of necessity provide information on what was being assessed, and this could in turn be related to the perfomance of students on the course. It would therefore be easy to see whether certain learning outcomes were consistently not achieved, or not achieved by some groups of students. This could be helpful in providing a basis for reviewing the teaching and learning methods employed by the course. Existing approaches to course documentation provide details of objectives, but since these are not related directly to assessment, they cannot be related to student achievement.

8.2.3 Student Voices

The model has clear benefits for students. Learning outcomes provide a means of making clear to students what they need to learn and how that learning will be assessed, this not only helps to legitimate learning which takes place outside the HE institution, but it also empowers students by enabling them to focus clearly on what is to be learned and how the learning is to be demonstrated. This seems likely to foster and encourage 'deep', rather than 'surface' learning and could be used to help to improve the quality of student learning in higher education. Current and proposed increases in student numbers in higher ecucation pose problems for the traditional teaching and learning strutures, which are "*characterised by a tendency towards inexplicitness and a reliance upon tacit, traditional conventions*" (Wright 1989). The use of learning outcomes may help students to develop more independent and active approaches to learning, and to be less reliant on tutor delivered teaching structures.

8.2.3 Employer Voices

The project provided a means of addressing the relationship between vocationally related occupational standards developed for NCVQ, and the academic standards of higher education. This will help to provide the means of integrating and relating credits gained through the the NCVQ and the CAT credit schemes.

The employer responses are quite clear that learning outcome descriptions can provide a useful vehicle for discussion with employers, but that it is the core outcomes which are of most interest to them. The work of the Enterprise in Higher Education Programme is exploring this territory helpfully.

Notes and Appendices

Notes

Note 1 - Taxonomies, Learning Styles and Knowledge

In the course of the project a number of approaches to the description and classification of learning outcomes, and the relationship of learning to performance, were examined. The following were all found useful in the definition of learning outcomes, although no single model addressed all the issues.

The Bloom Taxonomy

Bloom developed his taxonomy in the USA in the 1950s and it has been widely used ever since. It describes itself as a "*classification of the student behaviours which represent the intended outcome of the educational process in the cognitive affective and psychomotor domains*" [23]. The cognitive taxonomy, which describes the objectives relating to knowledge, intellectual abilities and intellectual skills, was the most immediately relevant to the project. It describes a hierarchy of six categories:

knowledge

comprehension

application

analysis

synthesis

evaluation

Each of which is divided into a set of sub-categories. These objectives (they are in fact the action verb in an objective statement) are intended to be applied across a range of subjects and levels.

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[23] The use of the word outcome is interesting, but in the context of the remaining text it is clear that what is being described is what would normally be understood as an objective

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The Carter Taxonomy

Carter developed a taxonomy expressed in terms of the "*personal qualities to be possessed by students, rather than the learning experiences by which they are to be developed*". (note that, like Bloom, Carter uses the language of learning outcomes, but concentrates more on the ways on which the objectives are to be learned and the structures required for their development, than it does on the assessment of the objectives). It includes three types of objective:

personal qualities,

skill,

knowledge.

Each of these is sub-divided into a series of sub-headings across what the author describes as, a "cognitive-affective axis".

Kolb's Learning Styles Inventory

David Kolb (1981) offers one of the most helpful and intelligible approaches to categorising knowledge in different disciplines. He used a Learning Style Inventory (LSI) with a large group of managers. Essentially this measures preferred learning styles along two dimensions, concrete-abstract and active-reflective. Kolb's work showed that the LSI scores were strongly correlated with the undergraduate majors of the people measured, and that these could be mapped into four types.

Abstract/reflective
(hard pure science, e.g. mathematics and natural science),

Abstract-active
(hard applied science e.g. engineering),

Concrete-active
(soft applied e.g. education and law) and

Concrete-reflective
(soft pure e.g. social science and humanities).

Kolb's findings agreed well with those of other authors, notably Biglan 1973 (who derived the hard-soft, pure-applied distinctions included above). Becher (1989) used these categories in a study of academic disciplines and he uses these observations to draw distinctions between the disciplines. For example, "*Scientists learn about nature by seeking regularities and framing mathematical models. There is little scope for patterning and reproducibility in the soft pure domain. To make the point another way, scientific knowledge is concerned primarily with universals, non-scientific knowledge tends to be focused on particulars*".

This project has only touched the surface of these questions and the development of detailed and meaningful learning outcomes which capture these differences must be addressed in future work.

Eraut's Six Types of Knowledge

Michael Eraut (1990) describes six types of knowledge derived from a study of management. However, he believes that the model has relevance in other fields. The six types are:

situational knowledge:
describes the knowledge which people bring to the way they describe situations, it includes what they see, what they look for and how they interpret what they see. It also implies some elements of what might be called interpersonal skill in reading the behaviour of individuals in the situation.

knowledge of people:
includes not just existing knowledge of people, but also the ways in which a person gets to know people and makes judgments about them, including prejudices related to race and gender.

knowledge of practice:
includes knowing or being able to access factual information in order to take action, this further implies knowing several possible courses of action and being able to choose the most appropriate.

conceptual knowledge:
is concerned with information handling and with how information is recalled and related, this is related to what are described as cognitive frameworks or structures of knowledge (Wolf, in Wolf and Black 1990). These are also related to what Argyris and Schon (1974) described as theories in use and espoused theories. They argue that professional action is based on a series of implicit theories (theories in use), most of which have not been consciously worked out, and attempts to improve professional performance must depend on helping people to recognise their theories in use and bringing them under conscious control. This is complicated by the use of espoused theories, which people use to describe their actions, but are not necessarily the same as the theories which they use in practice.

process knowledge:
concerned with how to go about getting things done, includes logical sequencing skills like timetabling and budgeting as well as 'thinking on your feet' and co-ordinating several different activities at once.

control knowledge:
is knowledge of one's self and one's thinking, it includes self awareness and sensitivity, and the gap between what one says and does.

Klemp and McLelland - Graduate Competences

Klemp and McLelland developed an approach to describing competences through the systematic study of the differences between exceptional and average performers. (Klemp. 1974, and Klemp and McClelland 1986). In a paper entitled "*Three Factors of Success*", Klemp states " *our most consistent, though unexpected, finding is that the amount of knowledge one acquires of a content area is generally unrelated to superior performance in an occupation, and is often unrelated even to marginally acceptable performance*".

Klemp identifies three factors of success in graduates: cognitive, inter-personal and intra-personal skills. These are similar to the types of knowledge described by Eraut. He suggests that most of the knowledge acquired in 'college' is lost very rapidly, but that the three factors which are retained contribute to the success of the individual. The cognitive skills include:

> conceptualising skills, the ability to see thematic consistency in diverse information, and to organise and communicate this,
>
> the ability to understand many sides of a complex issue and to resolve informational conflicts,
>
> the ability to learn from experience, to translate observations from work experience into theories that can be used to generate behavioural alternatives,

as well as a number of personal and interpersonal skills.

He suggests that these 'skills' require more precise definition than is often accorded by academics. He uses communication skill as an example of a 'competence' which can be "so broad as to encompass all observable behaviour, and so narrow as to include only speaking and writing skills". Motivation (an intra personal skill) is also used as an example of a poorly defined skill which can be taken to include everything a person does. He suggests that there are certain aspects of motivation which can be described with reference to "habitual thought patterns" for example, proactivity is associated with seeing oneself as a link in a 'cause and effect chain'.

The Klemp work has been developed in British higher education through two pieces of work by UDACE which explored their relevance to admissions selection for higher education. The first tested an American model in a British context (see Otter S. *Student Potential in Britain*). The second developed a British competence model (see Otter S. *Admissions to Science and Engineering: an Admissions Tutors Handbook*).

Note 2 - Aims and Objectives of Courses

CNAA Principle 3

1 Courses acceptable to CNAA must have aims and objectives which the curriculum structure, teaching methods and forms of assessment are designed to fulfill..

2 The aims will include the development, to the level required for the award of a body of knowledge and skills appropriate to that field of study and reflecting academic developments in that field.

3 The aims will also include the CNAA's general educational aims; the development of students':

intellectual and imaginative powers;

their understanding and judgment;

their problem solving skills;

their ability to communicate;

their ability to see relationships within what they have learned and to perceive their field of study in a broader perspective.

Each student's programme of study must stimulate an enquiring, analytical and creative approach, encouraging independent judgment and critical self awareness.

Note 3 - Approaches to Assessment

The problems which arose over assessment are discussed in Chapter 4. Some of the difficulties arose as a result of confusions about different kinds of assessment, and issues of grading, sampling and validity. This note is intended to clarify some of these points.

Norm referencing

Norm referenced approaches to assessment were clearly the most familiar in higher education. Here a mark or grade indicates a candidate's attainment in relation to other candidates in the cohort. The reference point against which a candidate is marked is how other candidates normally perform, there is no fixed external standard against which to assess each individual.

Criterion referencing

In criterion referenced assessment the attainment of the candidate is measured against a set of pre-defined standards . This approach differs from norm referenced approaches in several important ways:

- criterion referenced approaches have an externally defined standard, candidates are measured against the standard, not against one another;

- normally, in order to achieve credit a candidate must satisfy ALL the elements within the unit and must provide evidence which satisfies ALL the performance criteria;
- criterion referenced approaches do not usually allow for grading. A candidate either does or does not satisfy the criteria. Exceptional performance is demonstrated either by the achievement of more criteria or criteria at a higher level.

NVQs are a good example of criterion referenced qualifications.

Personally referencing

A personally referenced system measures the progress of the candidate in relation to his or her starting point, there are no pass fail standards, or normative grades. Neither the absolute position of the learner, nor his/her position relative to others is important here, the focus is the progress of each individual along an axis like, for example, increasing autonomy. This approach allows learners at many different stages to learn collaboratively (there is no competition for first place). However, it is not possible to use such a system to award credit, which must, by definition, represent the achievement of some form of external standard.

"Sampling"

In view of the complexity and variety of what higher education seeks to achieve, assessment is normally based on some form of sampling. Candidates are assessed on only a part of what they are believed to have achieved, and it is presumed that this sample accurately represents the whole. Thus, typically a candidate completes a written paper where s/he has a choice (three questions from ten). The validity of such methods depends, of course, on the appropriateness of the sample, and this strategy is sometimes thought to imply that the candidate only needs to know part of the subject material taught on the course.

The danger of 'sampling error' in this situation is compounded by the fact that degree examinations normally have a pass mark which may be set at 40% or 50%, again perhaps implying that the candidate need only know some things about the subject being tested, and need not know them very well. These add to the problem described by many academic staff that students can both avoid some areas of the syllabus altogether and can get away with a 'relatively sketchy' knowledge of the rest. A frequent complaint of academic staff is the tendency of students to regurgitate rather then process what they learn.

There are further problems in this type of assessment, these include:

- the narrowing of student learning to focus on what will be assessed. Strategies adopted by students include question spotting and parrot learning of model answers, both approaches tending to encourage shallow rather than deep approaches to learning.
- inconsistency in marking and grading. There is considerable evidence in the literature [24] to show that the assessment of the same piece of work by

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[24] See Rowntree. (1986)

different people can result in a range of grades ranging in the extremes from First to fail.

- the artificial nature of the assessment. Unseen written examinations are said by many to be "*a good way of preparing young people and of sorting out those who will be able to cope*" (Jessup 1991). They do however provide an entirely artificial situation, few graduates ever subsequently have to write in this way, in general most are required to provide succinct reports (their lack of expertise in doing this has been reported by many employers and authors), rather than essay style papers. There are also few occasions in work when a piece of written work cannot be redrafted, perhaps in consultation with a colleague and certainly with reference to other material. The pressure which examinations place on many individuals contributes further distortion.

Validity and reliability?

The prime requirement of any assessment process is that it measures what it is intended to measure. This issue of validity must take precedence over other technical issues, however, important. However, it would appear that concern about reliability - the extent to which the process produces consistent results, sometimes absorbs disproprionate attention.

Professional judgement

Concern has been expressed about the danger that criterion referenced testing, which is inevitably associated with an outcome led approach, will lead to the measurement only of those things which are easy to test by simple mechanical process. Although this is a legitimate anxiety about the likely reality, there is no logical connection between the two. Any form of assessment ultimately rests on a professional judgement. The process of defining outcomes makes it easier to examine the underlying assumptions of those who assess, and explore how far they are achieving their puirposes, it does not need to imply a simplistic "testing" approach.

Note 4 - Some notions of 'core'

The project work clearly supported the notion of a set of 'core' skills or outcomes which were generally expected of all graduates. There is no generally agreed definition of these qualities in higher education, although some notion of core clearly plays a part in selection at entry to HE as well as at graduation.

The project identified a group of such qualities by extracting common elements from the work of the subject groups, but it also examined a number of other models. Some of these are outlined below.

Government Core Skills

The Government has specified a set of core skills to be included in A and A/S Levels and NVQs (NCVQ 1991). These are:

> **problem solving**: covering responses to problems encountered in a wide range of circumstances. The model recommended by NCVQ comprises three key features, whether the problem is already defined, or requires clarification, whether the approach

to the problem is provided or selected, and whether the solution is judged against criteria provided for or devised for the individual solving the problem.

communication: includes interpreting information and presenting information and ideas. It involves reading writing, speaking and listening.

personal skills: (also described as personal effectiveness and interpersonal skills) includes improving one's own performance and working with others.

numeracy: focuses on the applications of number. it includes gathering and processing data, representing and tackling problems and interpreting and presenting data.

information technology: differs fundamentally from the previous four, and is based on the use of IT to perform practical tasks.

modern language competence: again differs from the first four, and may be best approached through the standards which will be developed by the languages lead body.

HMI Core Skills

HMI analysed a range of approaches to core, used in Youth Training, BTEC, CPVE and TVEI and identified the following list (HMI 1989):

knowledge about IT

knowledge about society and the environment

communication

numeracy

using IT

problem solving

practical skills

working cooperatively

adaptability

BTEC Common Skills

BTEC have produced a list of common skills, to be included in all BTEC programmes (BTEC 1991). These are:

managing and developing self

working with and relating to others

communicating

managing tasks and solving problems

applying numeracy

applying technology

applying design and creativity

CBI Common Learning Outcomes

The CBI defined a set of core elements which they wished to see in all traning and vocational education (CBI). These were:

- values and integrity
- effective communication
- applications of numeracy
- applications of technology
- understanding of work and the world
- personal and interpersonal skills
- problem solving
- positive attitudes to change

UDACE Key Abilites

Building on the work of Klemp referred to in Note 1, UDACE carried out an empirical study of Science and Engineering students in Glasgow Polytechnic and Strathclyde University to produce a profile of key abilities (Otter 1991). This profile included:

- concern for standards
- time management
- pro-activity
- systematic thinking
- conceptual thinking
- information seeking
- flexibility
- self-confidence
- accurate self assessment
- leadership
- persuasion
- perception.

Note 5 - The Three CAT Systems

There are three established mechanisms for credit accumulation and transfer in post-school education and training in England and Wales. All provide a framework of levels within which qualifications, or parts of qualifications can be placed and related to each other. The three systems are:

> **National Vocational Qualifications**: provide an outcome based framework for all vocational qualifications (supervised by the National Council for Vocational Qualifications (NCVQ))
>
> **CNAA CATS**: provides an award based framework for Bachelor's and Master's degrees (supervised at the time of writing by the Council for National Academic Awards, although the functions of CNAA are being redistributed following the Further and Higher Education Act 1992)
>
> **National Open College Network**: provides an outcome based framework for adult learning outside the scope of the formal examining and awarding bodies (NOCN is a voluntary association of individual OCNs, which exists to ensure consistent application of the national framework across individual OCNs)

The three schemes are distinct in a number of ways, although attempts are being made to link them. The relationship between CNAA CATS and NVQs is being explored in relation to professional qualifications, while OCNs accredit the majority of Access courses, and work is in hand to link OCNs to NVQs.

National Vocational Qualifications (NVQs)

In the NCVQ framework the word credit is used only in relation to the accumulation and transfer of 'credit' gained for completion of units. The structure uses the 'unit' as its lowest common denominator: the smallest part for which a separate certificate can be awarded. A unit is, however, not defined as a standard size, it must simply be a discrete aspect of competence, which makes sense as a free standing whole in the occupational area. The same unit may appear in more than one award, and the Awarding Bodies are required to recognise each other's Units towards relevant awards. Thus a candidate may achieve a unit of a qualification with City and Guilds, and then add this to units of a BTEC qualification to complete a BTEC award.

A National Vocational Qualification (NVQ) which is the basis of an award, is a collection of units of competence, again not a random collection, but a coherent description of the competence standards for a particular occupation or role within an occupation. Neither an NVQ nor the units of which it is comprised is a course or a module. Courses may be constructed which help learners to reach these standards and through which the learners may be assessed, but NVQs are not courses and do not therefore refer to teaching or learning time, either notional or real. The intention is that many people will be able to demonstrate that they are competent to the specified standards through prior experience or training, without having to take a further course.

The new General NVQs (NCVQ 1991) represent an interesting departure from this position, GNVQs will be unit based but will be equivalent in size to A and A/S Levels, in order to provide an alternative, vocational, route into higher education. It appears that the General NVQ will not be made up of the same sort of occupational standards as the NVQ, although they will have a clear vocational purpose. This will be a basis for the Advanced Diploma, which may include A and A/S Levels as well as NVQs and General NVQs. This could be a very appropriate combination for a higher education candidate with clear vocational objectives.

The CNAA CAT Scheme

The CNAA CATS framework is built around the Honours degree, and each credit is essentially a fraction of what a student must do to achieve a named award (degree, diploma, certificate etc, the Honours degree being 'worth' 360 credits, 120 at each of three levels). The scheme also provides for a number of intermediate awards and for awards at post graduate Masters level (level M).

What makes up a credit, or credits, is determined by individual HE institution, but the worth or value of the credit ($^{1}/_{360}$ of the degree) is assumed to be the same in each. The scheme relies on the assumption that degrees in different subjects and from different institutions are at the same level and standard. A degree may then be made up of credits gained from several different institutions, or from credits gained in different subjects. However the learning indicated by the credits must have a clear sense of coherence and students cannot simply accumulate credits in a 'pick and mix' fashion to achieve a named award. Although an individual may accumulate any number of 'general credits', these have no value until they are accepted towards a specified degree, at which point they become 'specific credits'.

National Open College Network

The National Open College Network (NOCN) provides a national framework for the work of individual regional Open College Networks (OCN). Each OCN is a collaborative group of education and training agencies across a region, whose members submit their programmes (normally locally designed for particular student groups) for credit rating within the nationally agreed framework. Programme submissions are based on descriptions of outcome, but the OCN, in recognising a programme also considers the relevance of the programme to its target group, its learning and assessment processes. While the programme's value is assessed on the basis of its outcomes, the number of credits awarded to learners on the programme is calculated on the basis of 'notional time' - the time required by the average learner, in normal circumstances to complete the programme - in units of 30 hours.

OCN's recognise programmes outside the scope of existing awarding bodies, up to degree entry level. They currently act as Accredited Validating Agencies for the majority of Access Courses, under the CNAA/CVCP Access Course Recognition process. Work is also in hand to enable learners to acquire Units of NVQs within OCN programmes.

OCNs normally include in their membership agencies from public, private and voluntary sectors, including institutions of further and higher education, and they agree to accept for transfer purposes any credit awarded by a member institution (within any OCN recognised by the National Network).

Differences

The most important difference between the three frameworks is that they derive their authority and notions of value from different sources. CNAA CATS begins from the notion of the award (the Honours Degree), and is answerable to the quality assurance processes of higher education. NVQs, on the other hand are based on occupational competence, an employer view of what is required for competent performance in the workplace, based on specified outcomes defined nationally. OCN credits are based on a "bottom up" negotiation of equivalence between locally developed learning programmes, linked, where possible, into other credit and award systems. NVQs and OCNs both define outcomes, only OCNs make explicit use of notional time to measure credit value, although many higher education institutions do refer to time when allocating credit within the CNAA CATS scheme.

These are fundamental differences and reflect the different purposes of the schemes. However the differences do not preclude a greater degree of integration. It is not difficult to see how an NVQ unit, at an appropriate level and in an appropriate occupational area, could be included in a degree programme, perhaps as part of a sandwich course, and given a CAT credit rating derived from a judgment of the type of outcome and an overall balance of the student programme. The fact that the NVQ is defined in terms of outcomes and performance criteria makes this easier. The proposals in this report for distinguishing types of outcomes within a coherent degree programme would help in this.

Degrees which are specifically a preparation for a particular area of employment, or which lead to a professional qualification will be affected by the introduction of NVQ standards above Level 4. Current work in this area suggests that NVQs at this level will look rather different from the more familiar ones at Levels 1 and 2, and that they will address in some depth the knowledge and professional practice questions which engaged the attention of the subject groups in this project. It will also make sense for some degree courses which may have a vocational 'flavour', to include some relevant NVQ **units** as part of their courses. Here the differences between the NVQ unit and the CAT credit will be an advantage, it will be possible to incorporate the NVQ standards into a degree course structure as general CAT credits, and to provide a CAT credit rating based either on the notional hours of learning, or on the relative contribution which the NVQ unit makes to the whole award. This does not imply that a degree will become an NVQ, and the two are clearly different and serve different purposes, but there are and will be areas where the two can overlap and where this will be a benefit to the student.

A national framework

The development of a national framework for credit accumulation and transfer will call for the harmonisation, in some way, of the work of CNAA CATS, National Vocational Qualifications (NVQs) and Open College Networks (OCNs). This would provide a system of credits extending across the whole of post school education, from adult basic education to Masters degree, and offering the means of progression for adults and young people at any stage in their career. The integration of these different systems will be greatly facilitated by the clear description of what students gain credit for.

Appendix 1

Project Strategy and Methodology

The work of the project centred on three groups of people, academic staff, students and graduate employers, this section describes and briefly evaluates how the work was carried out and the contribution it makes to the overall findings. The chart below outlines the stages of the work with each group.

	Employers	**Academic Staff**	**Students**
1		Institutional Consultation (November 1989)	
2		Selection of Institutions (December 1989)	
3	Employer Seminar 1. Employer Visits (April 1990)	Subject Group Work (Jan-Dec 1990)	
4		Consultative Seminar (September 1990)	Student Workshops (Nov-Mar 91)
5		Assessment Workshop (Sept 1990)	Assessment Pilots (Sep-Jun 1991)
6	Employer Seminars (Feb-May 1991)	Consultative Document *What Can Graduates Do?* to all HEIs (Jan 1991)	
7	Employer Consultative Document Issued (May 1991)	Review Workshop (May 1991)	
8		Draft Report to Steering Committee (Oct 1991)	

Stage 1: Initial Consultation

The initial consultative seminar was held. All HE institutions in England and Wales were invited, and 23 attended. The seminar was intended to do two things:

- firstly to inform as many people as possible of the project and its aims and objectives,
- secondly to assist in deciding which subjects would be the most suitable for detailed study in the project.

The exercise provided information about the subject areas which were felt to be the most readily investigated, and confirmed that there was considerable interest in developing a learning outcomes approach to courses in higher education. The five subject groups chosen by the Project Steering Group were: Design, Engineering, English, Environmental Science and Social Science. .

Stage 2: Selection of Institutions

Letters inviting institutions to bid to participate in the project were sent to all universitites, Polytechnics and Colleges of HE in England and Wales. 53 institutions responded to the invitation and eleven were selected to take part. Two of the latter (Bradford University and Leicester Polytechnic) subsequently withdrew.

Each institution provided academic staff who were seconded on a half time basis for one year. These people made up the five subject working groups [25].

The groups were deliberately composed of lecturers in higher education drawn from a range of departments in both Universities and Polytechnics. They represented a fairly typical cross section of staff, with experience in teaching, assessment, course design, admission and recruitment of students, work with adult students and research in their subjects. None of the members of the group had a background in educational theory and almost none of them had heard of learning outcomes before the project began.

There were two main reasons for creating the groups in this way,

- the outcomes of the work of such a group would give a good indication of how the development of learning outcomes might be undertaken on a larger scale by other academic staff in the future,
- the findings of such a group were likely to be taken seriously as representing the views of mainstream academic staff rather than the views of a group of experts in educational development or the Employment Department.

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[25] Appendix 2 lists the staff participating in the groups.

Stage 3: Subject Group Work

Objectives

The groups were given three specific objectives for the twelve months work,

- to develop a set of learning outcomes for their subject area, with drafts by September 1990 and final versions for circulation by November 1990,
- to develop a way of accrediting the learning outcomes,
- to pilot appropriate methods for the assessment of the learning outcomes.

One objective was to investigate a range of approaches to describing and writing learning outcomes. This was one reason for establishing different subject groups and for selecting a range of subjects which included clearly vocational subjects like Engineering and 'academic' subjects like English.

Encouraging Diversity

It was anticipated that the different structures and traditions of the five subjects might lead to different ways of describing and structuring learning outcomes. The subject groups were therefore actively encouraged to develop individual approaches to describing their learning outcomes and to concentrate on developing structures which seemed most appropriate for them.

The groups were encouraged not to begin by developing learning outcomes for different years or stages of courses, but to describe the outcomes they sought at the final degree stage, seeking to define what they expected their graduates to know and be able to do.

There were two reasons for taking this approach,

- thinking of the outcomes in levels was likely to confine the groups to considering the structures of their existing courses. This seemed likely to lead to what one member described as " a cynical rewriting of course objectives in the passive tense".
- the courses represented were very different in structure and philosophy, for example material covered in the first year of some courses was included in the final year of others, some courses tackled broad principles at an early stage while others sought to develop these over three years.

All the staff were provided with a detailed briefing on the project and background papers, and a wide range of articles, papers, books and other publications were circulated to the group members. A series of workshops was also arranged to provide experience of the Employment Department's functional analysis approach to defining outcomes, on employer views of graduate learning outcomes and on assessment and credit structures. The groups worked independently for most of the time, arranging small group meetings and dividing specific tasks between members. Notes of all meetings were circulated both as reminders of actions agreed and as a means of establishing a consensus. All five groups met together on a number of occasions for workshops and to review developments across all the groups.

Stage 4: Consultative Seminar and Workshops

A major seminar workshop involving 93 academic staff was held in September 1990 in Sheffield. Representatives of all higher education institutions were invited to attend and draft papers were sent to all those who replied. The workshop was divided into subject groups and delegates were able to attend two workshop sessions during the day.

The seminar and the workshops provided an opportunity for critical peer review of the drafts. There was considerable, and critical comment on the material provided, and several of the project subject groups rewrote their drafts prior to publication of *What Can Graduates Do*? The Engineering group was particularly criticised for the very factual and knowledge based nature of the outcomes described. Environmental Science, on the other hand was criticised for the general nature of the outcomes in the draft, which were thought to be applicable to any graduate and not to provide either sufficient real substance or a flavour of what environmental science graduates were like.

Other workshops were held throughout the project, and the ideas were debated by UDACE and institutional staff at a range of conferences and meetings to which they were invited by other agencies.

Students

Consultation with students was carried out through a series of workshops held with groups of first and final year students in all the participating institutions. A workshop approach was chosen as a practical way of seeking the views of students, since individual interviews or questionnaires were both thought unlikely to yield sufficient information. Workshops offered a way of reaching a large group of students and of promoting some discussion between them of learning outcomes.

44 workshops were held between November 1990 and March 1991. The average number of students in each workshop was 16. A standard workshop protocol was developed in order to increase reproducibility and make it easier to analyse the responses obtained. The workshop had the following structure:

- students were given a probe questionnaire, which they were asked to complete individually. This comprised a number of statements with which students were asked to agree or disagree, these included statements relating to academic work (be able to think for myself), and practical and technical skills, as well as statements relating to work and careers, (I have career options I did not have before), and to personal and social aspects (meet interesting people).
- they were then asked to work in small groups and to agree on ten learning outcomes for their course, for first year students these were outcomes they expected to achieve and for final years they were learning outcomes that students felt they had achieved.
- these were then discussed by the whole group and areas of ambiguity and overlap examined.
- data from questionnaires and from small and large group discussions was collected and analysed.

Students welcomed the opportunity to discuss their views of learning outcomes and to express what they were seeking from their courses. Some of the academic staff working on the project expressed surprise that their students had such a wide range of views on their learning and were surprised at the depth and detail of the responses. Several staff reported the findings of the workshop as being valuable in terms of curriculum design and course development.

The outcomes described by students were much broader than those described by the staff. Almost half the outcomes which students anticipated or felt they had achieved were in the personal and social area, whereas only one quarter of the outcomes described by staff were in this area. Details of the student outcomes are presented in Appendix 6.

Stage 5: Assessment

Each institution developed and piloted a method of assessing one or more of the identified learning outcomes with a group of students. This work required staff to produce materials and often worksheets for students. Some of the exercises involved other academic staff in the departments. All the pilot exercises were evaluated by staff and students.

Stage 6: *What Can Graduates Do?*

Revised drafts of the learning outcomes developed by each group were published in a document entitled *What Can Graduates Do?* which was sent for comment to all higher education institutions in the UK. Separate copies went to:

> the Vice Chancellor, Director or Principal,
>
> the Dean or Head of Department in each of the five subjects addressed by the project.

A questionnaire outlining areas of response was included and replies were sought within two months. The 74 responses received included:

> responses following discussion in Departments, Faculty and Academic Boards and internal consultation of various kinds,
>
> responses from individuals, some commenting on the project as a whole and some on the learning outcomes developed in a single subject area,

Consultation with Graduate Employers

Consultation with graduate employers was achieved through the circulation of a revised version of *What Can Graduates Do?* Since the original text was written for academic staff and was generally felt to be too detailed to send to employers, it was revised and edited with the help of a small group of employer representatives who had offered their support for the project. The employers recommended that the document be widely circulated to the major graduate employers and to some smaller employers. They suggested that the most useful responses would be obtained from people who were line managers of young graduates and whose business success depended on recruiting good graduates. They felt that responses from personnel specialists were likely to be less informative. Copies of the document were therefore circulated with a covering letter inviting comment from line managers.

The revised version of the document was in two parts, the first included a table of 13 general learning outcomes based on the common elements of the outcome lists developed by the subject groups. The general outcomes were:

- ***access and select information***
- ***synthesise and interpret information***
- ***demonstrate commitment***
- ***demonstrate self discipline***
- ***manage personal stress***
- ***communicate clearly and accurately***
- ***communicate effectively orally***
- ***work cooperatively***
- ***work alone***
- ***accept criticism***
- ***understand own strengths and weaknesses***
- ***act ethically***
- ***possess basic computer skills***

The second part contained an edited version of the subject specific learning outcomes with spaces for comments and additions. It was circulated through the Association of Graduate Recruiters and to a selected group of Design employers, Local Authority Social Service Departments and to some Personnel specialists through the Institute of Personnel Management.

In all 800 copies of the document were circulated and 138 replies received.

Appendix 5 lists the employers who responded.

Stage 7: Final Workshop and Report

The project ended with a residential workshop for institutional staff, to review the responses to *What Can Graduates Do*? and discuss the general conclusions of the project.

Stage 8: Report Preparation

Following the workshop the Project Director prepared a full draft report for discussion with the project steering group collectively and individually. In the light of that consultation the present report was produced for publication by the Project Director, in consultation with the Head of Unit.

Appendix 2

Subject Group Members

Design group

Liverpool Polytechnic	
Professor Roger Breakwell	Dean of Faculty of Art and Design.
John Barraclough	Principal Lecturer, Course Leader, Graphic Design.
Sheffield Polytechnic	
Professor David Vaughan	Head of Department
Ian Rodger	Senior Lecturer, Course leader
Peter Slater	Senior Lecturer Course Leader
Sue Drew	Careers/personal skills and qualities project

Engineering

City University	
Roy Winterburn	Continuing Education.
Nottingham Polytechnic	
Dr Bob Munton	Mechanical Engineering
Polytechnic of Wales	
Colin Rees	Computing

English

Lancaster University	
John Mowat	Senior Lecturer, Admissions Tutor
Newcastle Polytechnic	
Alan Ingram	Senior Lecturer, Course Leader
Polytechnic of Wales	
Rob Middlehurst	Senior Lecturer, Communication Studies
John Beynon	Senior lecturer, Communication Studies

Environmental Science

Lancaster University	
Peter Larson	Senior Lecturer, Admissions tutor
Liverpool Polytechnic	
Dr Terry Jeeves	Liverpool Integrated Credit Scheme
University of East Anglia	
Dr John Barkham	Senior Lecturer
Frances Nicholas	Research Assistant

Social Science

Newcastle Polytechnic	
Dr Roy Boyne	Head of Department
Sheffield Polytechnic	
Dr Peter Ashworth	Principal Lecturer
Judy Saxton	Research Assistant
Teeside Polytechnic	
Barry Sudworth	Senior Lecturer

Appendix 3

Consultative Seminar: Institutions Represented

Sheffield City Polytechnic
Open University
Newcastle Polytechnic
Middlesex Polytechnic
Polytechnic of East London
Cardiff Institute of HE
Nottingham Polytechnic
University of Surrey
Training Agency
Leicester Polytechnic
Scottish Wider Access Programme
University of London
Staffordshire Polytechnic
Luton College of HE
Wolverhampton Polytechnic
Liverpool Institute of HE
Teeside Polytechnic
Leeds Polytechnic
Lancaster University
University of Durham
Nene College
Chester College of HE
City University
Liverpool Polytechnic
Polytechnic of Wales
Council for National Academic Awards
University of Warwick
Bristol Polytechnic
University College of North Wales
Manchester Polytechnic
University of Bradford
Huddersfield Polytechnic
University of Keele
University of Hull
Brunel University
Polytechnic of North London
Birmingham Polytechnic
Loughborough University
Coventry Polytechnic
Bolton Institute of HE
University of Kent
Oxford Polytechnic
Glasgow College
University of Ulster
Anglia HE College

Appendix 4

"*What Can Graduates Do?*" Institutions and Individuals Responding

CNAA
Robert Gordons Insitute of Tech
King Alfred's College, Winchester
Southampton Institute of HE
Roehampton Institute
Birmingham Polytechnic
Bristol Polytechnic
Humberside Polytechnic
Polytechnic of Central London
Manchester Polytechnic
Newcastle Polytechnic
Oxford Polytechnic
Portsmouth Polytechnic
Staffordshire Polytechnic
Teeside Polytechnic
Polytechnic of Wales
The Open Univ. East Anglian Region
The Open University, Scotland
University of Belfast, Queen's
University of Bristol
University of Durham
University of Edinburgh
University of Lancaster
Grays School of Art
Falmouth School of Art and Design
Liverpool Institute of HE
Paisley College
St Mary's College
Bournemouth Polytechnic
Glasgow Polytechnic
Kingston Polytechnic
Polytechnic of East London
Middlesex Polytechnic
Nottingham Polytechnic
Plymouth Polytechnic South West
Sheffield City Polytechnic
Sunderland Polytechnic
Thames Polytechnic
Wolverhampton Polytechnic
The Open University, Walton Hall
University College of Ripon & York St John
University of Bradford
University of Dundee
University of East Anglia
University of Hull
University of Leeds

University of Liverpool

University of Loughborough

University of Leicester

University of London, Wye College

University of Newcastle upon Tyne

University of Nottingham

University of Oxford,
School of Geography

University of Reading

University of Salford

University of Southampton

University of Stirling

University of Ulster

University of Wales, Bangor

University of Wales, Cardiff

University of West London, Brunel

University of York

Professor Lewis Elton

Rev. R Tuck

Jane Harrop, DES

Appendix 5

Employer Responses

Alfred McAlpine Construction Ltd
Bank of Scotland
British-American Tobacco Co Ltd
CMB Packaging
Cameron Markby Hewitt
Colas Holdings Ltd
Creed Lane Graphic Communication
Cumbria Constabulary
Daiwa Europe Ltd
Digitial Equipment Co Ltd
Durham Constabulary
Financial Solutions Ltd
Ford Motor Co. Ltd
Haden Young Ltd
Herbert Smith
Hitachi Europe
Hymatic Engineering Co. Ltd
IDV UK Ltd
Legal and General
MOD, Defence Engineering Services & Defence Science Group
Noble Lowndes and Partners Ltd
Massey Ferguson Tractors Ltd
PSA Services
Pentagon Training Ltd
Pilkington PLC
RTZ Ltd

Balfour Beatty Ltd
Barclays Bank PLC
British Gas PLC
Cadbury Schweppes PLC
Cleveland Constabulary
Courtaulds PLC
Crosfield Electronics
Dairy Crest Ltd
Devon and Cornwall Constabulary
Dixon Wilson
Durham County Council
Fisons PLC
Guardian Royal Exchange
Hampshire Constabulary
Herts Constabulary
Hoover
ICI
Institute of Chartered Accountants
Lucas Industries PLC
NNC Ltd
Nottinghamshire Constabulary
Newey and Gyre
Peat Marwick McLintock
Peugeot Talbot Motor Co Ltd
Prison Service
Rank Xerox (UK) Ltd

Reeves & Neylan Chartered Accountants
Robson Rhodes
Rolls-Royce
Royal Bank of Scotland PlC
Royal Ordnance PLC
Schlumberger
Seismograph Service
Smith Kline Beecham
South Wales Constabulary
Standard Life
Steetley PLC
Suffolk Constabulary
T C Scheme
Tarmac Construction Ltd
Thames Valley Constabulary
Thorn EMI Electronics
Unilever
VSO
Warwicks Constabulary
West Midlands Constabulary
WH Smith Ltd
Yorkshire Water PLC

There were also 36 responses from small employers in Design, gathered through one of the participating institutions.

Appendix 6

The Student Outcomes

The following learning outcomes were identified by student groups at the student workshops. The number of occasions on which workshops groups mentioned each is shown, together with its orientation (Personal/Social (P), Curricular (C) and Vocational (V)), and examples of statements recorded .

Outcome Type	No. refs.	Orientation	Examples
Enhanced career options	60	V	Will open up more career doors I will have career options that I didn't have before
Increased independence	55	P	more self reliant and responsible more independence from friends and family
Increased self esteem	49	P	become a stronger person. satisfaction from handling things better.
Acquire skills/techniques	46	C	gain practical skills, not just theory. a broader base of skills.
Become more knowledgable	40	C	wider knowledge of art history. gain more knowledge and broaden horizons
Critical thinking	39	C	more critical and questioning things. develop a critical approach. more developed constructive critical skills
Increased job satisfaction	34	V	able to progress in my chosen career. ability to choose a job I enjoy.
Acquire IT skills	34	C	able to use a computer. increased understanding of basic statistics and comupter packages
Increased understanding	34	C	a greater understandiong of history. understand English literature more fully. some sense of my place in the universe.

Meet a wide range of people	34	P	meet interesting people. come across a wider social mix. get to know people from different backgrounds.
Improved written communications	31	C	learn to write better. able to write clearly and fluently.
Improved oral communications	30	P	better verbal skills. better listener
Make good friends	28	P	good friends and contacts. meet people and make friends.
Learn time management	28	P	better organisation of time. time management.
Become self critical	27	P	know your own limitations. know and accept my limitations
Increased tolerance	26	P	get on with people from different backgrounds. increased understanding of people and individual circumstances
Acquire analytical skills	25	C	interpretation - not only of data but of situations. analyse information
Work with others	24	P	capable of working for and with others. better work in groups.
Think for oneself	24	P	better able to think for myself. greater chance of individual expression.
Positive view of course	24	C	chance to study and learn about areas that are interesting.
Ability to make money	22	V	make money. increased salary and better standard of living.
Increased self-discipline	22	P	better prepared to stick at something. knowing when to work and when to play.
Improved life skills	22	P	better organisation of finances. I can cook better. better organised for life after Polytechnic.
Changed attitudes	21	P	increased environmental awareness. will be more concerned about issues.
Flexibility in new situations	20	P	coping with areas of no previous experience. able to cope with the unknown.
Get a good degree	18	C/V	finish with a good degree. a first!
Produce good work	16	C	do oneself justice. produce good work
Negative view of course	13	C	less idea of what I want to do with my life than when I started.

Improved social life	13	P	meeting people and socialising. social position is much better now.
Acquire problem solving skills	13	C	more logical approach to problems. solve problems.
Acquire management skills	12	C/V	capable of leading a team or workforce on projects. organise other people and delegate.
Go to parties	11	P	have a good time. three years of parties. increased tolerance to alcohol.
Acquire industrial experience	11	V	interesting year out in industry. get hands on experience.
Increased altruism	11	P	to help people. helping people to help themselves.
Acquire library skills	10	C	able to use libraries more effectively. better able to extract information from books.
Join in extracurricular activities	10	P	involvement in clubs/societies/politics. go mountainering.
Acquire data collection skills	10	C	design and carry out research. obtain data.
Increased confidence with others	10	P	expect to be more socially confident. gain more confidence at public speaking.
Increased motivation	10	P	able to use own initiative. improved committment
Get a degree	9	C	a piece of paper. a recognised qualification.
Improved social skills	7	P	able to mix better socially.
Delay decisions about career	6	V	time to work out my future career. avoid going out to work.
Take more risks	5	P	able to take more risks. more adventurous.
Increased vocabulary	4	C	increased vocabulary.
Opportunity to travel	4	C	broaden horizons geographically. living in a different part of the country.

Appendix 7

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[26] When the project began Sue Otter was the UDACE Senior Development Officer for Accreditation and Learning Outcomes. In December 1990 she was appointed Head of Credit Accumulation and Transfer at Nottingham Polytechnic. UDACE is grateful to the Polytechnic for agreeing to release her part-time to complete the project and the present report.

[27] Daffyd Thorne was seconded to UDACE from the London Institute to work on this project.

UDACE

Learning Outcomes in Higher Education

What was UDACE?

UDACE was a national development unit for the education of adults in England and Wales. It was created as a unit of the National Institute for Adult Continuing Education in 1984 by the Secretary of State for Education and Science. The Unit's role was to examine possible areas of development, recommend strategies for development and sponsor projects to support development.

In April 1992, following a decision of the Secretary of State, the Unit was merged with the Further Education Unit, which inhereits its work and agendas. During the life of this project the Unit's Governing Body was a Steering Committee comprising the following members.

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